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Gandhiji's Talisman

I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test:

Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj for the hungry and spiritually starving millions?

Then you will find your doubts and your self melting away.

M.K. Gandhi



EDITOR'S NOTE

This issue of the Journal contains papers and articles on five major themes. First theme of reforms in teaching, professional development of teachers and assessing teacher effectiveness brings out some interesting facts and findings. M.A Khader and P Das address the million dollar question Do the teacher educators change their practices in tune with the reforms in teacher preparation? A study of focussed group discussion on teacher trainees and their educators reveals that the emphasis continues to be on the conventional methods and theory. It is also well clear that lecture is used as the most favoured mode by trainers. V. Ramdas, based on two small scale participatory evaluation studies of in-service training programme, found that the negative effects due to no incentives, unclear expectations, lack of inter-personal support, absence of atmosphere for peer group learning, poor follow up and supervision can greatly diminish the efforts of the professional development initiatives. In his paper on assessment of teacher effectiveness in relation to student learning outcome, S. Prem Kumar has made an attempt to find out the extent of acceptability of teacher assessment based on student-learning outcomes and the order of preference for the type of student-learning outcomes. The idea of using student-learning outcomes for assessing teacher performance is supported by 44 per cent of teachers. So, the author concludes, this assessment technique could be used along with other methods for teacher assessment.

A couple of papers talk about scientific literacy and understanding of science. J.K Mohapatra and Pooja Mohapatra look for an indigenous way for imbibing scientific literacy from religious and cultural practices. S A Shaffi and R. Ravichandran bring out strategies for learning science as a life long experience. They support their argument from National Curriculum Framework for School Education (2000) which advocates for making learning as experience where the learner constructs knowledge.

The paper on classroom processes by M.K. Satapathy and D Dash and Shalinee Bhardwaj's paper on creating resource facilities in school list out various activities and creating a resource room as tools for experiential learning. While the paper on the state of school education in North East India by J P Singh depicts the school education scenario in the states and initiative that need to be taken for quality improvement, the paper on decentralisation of elementary education in the state of Gujarat by S. Kumar analyses the process of decentralisation and its impact on quality of education.

Kuldip Kaur in her paper on Maktab education in mosques stresses the need for introducing the 'secular' subjects which include science, mathematics, languages and social science in Maktab education to get higher education without much hinderance.

Academic Editor

Teacher Educators Initiate Reforms in Teaching, Yet...

M.A. KHADER*

P. DAS**

Abstract

The authors examine the role of teacher educators in initiating reforms in teacher preparation. Teacher educators may design a well-structured course and initiate action for implementation. However, the critical question that needs to be addressed is: do they change their professional practices in tune with the reforms in teacher preparation? The paper examines this question by exploring a case of reform in the teacher preparation programme, then it moves on to the theoretical framework and discerns certain limitations. At the end, the role of the human factor in the implementation of a reform has been examined. The analysis reflects that the change should first envelope the teacher educators, but the question is, who can teach a teacher educator, which is as good as asking who can lead a leader.

Key Words: Professional Practice in Teacher Education, Transaction, Training

With the onset of 2000, a series of materials outlining the professional roles of teachers and teacher educators have been seeking attention. These materials, whether books or journals or seminar reports, unfold series of new challenges and place great expectations on both teachers and teacher educators. Professional roles that have been glowingly painted depict the image of a teacher as one who is empowered with

interactive communication skills, expertise in information technology, subject-specific competence to manage learning group, competence to address content-specific learner needs, relevant competence to mould learners to live together in multicultural settings, and the like. A discerning eye can sense the complex set of skills enveloped in each of them and, of course, the prevailing interlinkage among them, too. Further

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reflection on the components of a professional image underscores the essentiality of a teacher to shift from the position of a generalist to the position of a professional. Obviously, the teacher needs to enrich himself or herself with the essential competence to address the new challenges. The implications for the teacher educator and the teacher education programme are quite obvious. Unless the teacher educators initiate action for change, the expected professional image does not become a reality and the teachers would continue to carry on their performance in the same form and style. The critical roles of teacher educators and the teacher education programme assume meaning in this context.

It is not surprising to find a correspondence between what the teacher educators do and what the teachers practise. Field evidence, for instance, reveals that if the training programme for teachers is based on the conventional approach (e.g. the verbal mode), the same pattern dominates the classroom transactions at the school level (Khader, 1996). If the teacher educators choose to traverse a knowledge-oriented path, it is realistic to expect the teachers to choose a different path. Such a relationship between teacher educators and teachers in the professional field assumes critical meaning in the context of a reform for the teacher's professional development. The premise is that the effectiveness of the professional development of teachers is contingent upon the actions initiated by the teacher educators that set in motion the change process to attain professional development. Interestingly,

the reform effort is often focussed as if it is meant only for teachers and the underlying implications for the teacher educators are rarely looked at. But the fact is that like the teachers who are required to re-learn their practice in tune with the reform, the teacher educators, too, are required to re-learn their craft. The implication is that teacher educators need to fine-tune their mindset and practice, and set in motion the change process for professional development. For instance, Stein, Smith and Silver (1999) view that if professional developers are to be effective in supporting the transformation of teachers, they too must undergo shifts in their knowledge, beliefs and habits of practice that are akin to transformation than to tinkering around the edges of their practice. Based on the experiences from mathematics reform, Stein, Smith and Silver further point out that professional developers need to know how teachers learn within organisations and through interactions with others, and they require not only to access a variety of strategies, but also to have the ability to gauge which strategy will be most effective with a given set of teachers, in a given setting.

Obviously, teacher educators need to shift their thoughts, beliefs and habits of professional practice to keep pace with reforms. In reality, they often reformulate teacher development programmes and actions woven around theoretical understanding, giving less space for practical skills and strategies to address the professional needs of teachers. Such an effort does not yield the desired result. The question that arises who can teach the teacher

educator is as good as asking who can lead a leader. In this article, we explore the need for shifting the thoughts, beliefs and habits of professional practice of teacher educators from three angles. We begin by exploring a case of reform in teacher preparation programme and mapping out evidence for the shift. We then move on to the theoretical framework provided in the teacher preparation programme and outline certain prevailing limitations. At the end, we examine the role of human factor as a conduit in the implementation of a reform.

Professional Practice

In this section we present a set of evidences by exploring the practices teacher educators follow while operationalising a course design. We focus on the recent reform in teacher education—the two-year B.Ed. course of study, initiated at the Regional Institute of Education, Bhubaneswar. This is a well-structured course with adequate spaces for theoretical explanations and activities for developing professional skills and insights spread over a period of two years. The thrust that the course places on teaching skills, pre-internship and internship in teaching, working with community and mode of transactions through discussion, project work and seminar and group activities illustrates the various paths that could pave the way for developing professionalism. These paths, if they are chartered well, would help in blending theoretical ideas and skills that are basic for nurturing professionalism in teaching-learning.

Such paths, obviously, underscore the need for a shift in the professional practice of teacher educators. The question that confronts us is whether the desired shift among the teacher educators has become a reality.

We reflected on this point at length and our considerations told us that teacher educators continue to perform their professional roles centred around the conventional approach in the treatment of inputs during theory or professional experience sessions. In other words, though there is a change in the course structure and nature of inputs, the corresponding shift expected of teacher educators is yet to become a reality. They continue to remain good at imparting knowledge. Though they provide space for skill development, they need to sharpen or change their tools for nurturing the process of professional development. The teacher educators, in fact, follow the details of the course structure. While dealing with theory they follow the course guidelines and cover the stipulated course content, and engage the students in teaching skills, pre-internship and internship activities as per the schedule. However, they fail to transact the inputs in the much needed form or depth for nurturing professionalism. We were curious to know whether our reflection holds true or represents the reality. We decided to explore the reality using two sources—the outgoing students' group and the teacher educators. Using focus group discussion the students' views on the practices that are followed in the treatment of course inputs were obtained. The reflections of two teacher

educators on the shift in the professional practices of colleagues with the onset of the new course were also gathered. Focus was centred on open-ended expressions of both the students' group and the teacher educators. We explored the practices based on the congruence between students' and teacher educators' views. We relied on multiple data (students' group and teacher educators) based on the rationale that our source provides an interpretative context for the other. Our considerations in the selection of the students' group and the two teacher educators were mostly based on intuition, interest and experience. The student-constructed and teacher educator-constructed views are used for interpreting the reality.

Students' Group

Around 45 outgoing students of the two-year B Ed (Secondary) course participated in the focus group discussion held in April 2002. The expressed views reflect on the practices that are followed. Students, no doubt, point out that they have gained theoretical understanding. However, abstract or generalised knowledge or ideas do not have much meaning for them. What matters is a detailed and specific knowledge base that would help them to find meaning of the education system and the process of schooling. It is striking to find that the process of skill development needs to be fine-tuned. They fail to choose and execute a lesson with the focus on problem-solving or discovery learning or learning needs of slow learners or gifted children or cooperative learning strategy or self-

learning by children. They express the desire to know how to perform the techniques to address the classroom challenges. What they need is professionalism in supervision during internship in teaching. They look to teacher educators not only for knowledge about teaching but of the doing or performing part of teaching as well. The prevailing weakness in the development of professional skills, obviously, indicates the direction of the shift the teacher educators need to initiate. Students' (S_1 , S_2 , . . .) views outlined below reflect the prevailing form and the desired shift.

- S_{20} I find certain advantages in the course. The course provides knowledge. Pre-internship, internship, and working with the community provide experiences. The course gives exposure to teaching skills. This helps in developing skills related to teaching. But the skills related to problem-solving, inquiry, communication, etc., are not demonstrated or practised and we fail in these skills
- S_{10} : Working with the community provides better exposure for understanding life and education. We need activities demonstrating theoretical ideas. We do not find such activities and we need them.
- S_3 : Exposure to computer education is a new idea for the trainees and we enjoy it.
- S_{14} : Theory is good. It will be good if higher level content is given in content-cum-methodology

papers because it would help in enhancing the knowledge level of teachers. We were taught the ideas of cooperative learning and self-learning approaches. But they were never demonstrated, nor was it shown how to practise these while teaching. Since we were not exposed to the 'doing' part of these approaches, we could not use them during internship.

S₃ We are familiar with the ideas about the discovery method—maybe not all the details but we know the idea. We were not shown how to use the discovery method and we could not use it during internship.

S₁₄ Demonstration of lesson plans for slow learners and gifted children will help us in understanding and practising them. We are not able to deliver such lessons in classroom situations.

S₁₅ The time available for coverage of the course content is less during the second year because of the internship in teaching programme.

S₁₁ Classroom lectures give us theoretical knowledge or explanations. This alone does not help us to become good teachers. We need clarity of concepts and ideas, and not merely general ideas, but deep and specific. We also need mastery over pedagogy. Techniques to face the actual

classroom situations are important for our 'growth'. Supervision during internship should help us with suggestions for improvement. It does not happen always. We also need to know how to solve students' learning problems while teaching. Knowing about content and teaching is essential but developing the skills of teaching is equally important for us.

Teacher Educators

The views of two teacher educators further magnify the direction of shift. Lecture forms the main mode of transactions, and such an approach does not promote thinking or reflection or self-learning. Teacher educators do not make specific efforts to demonstrate how theory works or to relate it to the schooling system. The prevailing form of treatment for skill development, whether related to the lesson plan or to teaching, does not pave the way for professionalism. The prevailing lesson-plan format does not provide space for unexpected turns during delivery. In fact, room for thinking, planning and reformulating ideas in a way that is unexpected indicates its dynamic nature. The language component of teaching, the critical component of communication, is not given any importance in teacher training. The continued dependence of teacher educators on the verbal mode of transactions even while dealing with the skill development sessions is strikingly visible. They need to move out of the generalised approach to specific

activities oriented skill development. The teacher educators' (TEs) views outlined below illustrate the direction of the shift.

TE₁. Many modes of transaction such as lecture, discussion, seminar, demonstration have been listed for use in the classroom. However, the most favoured one is the lecture and the students often become passive listeners. Teachers do help them pick up some conventional pedagogy but have not been successful in developing in the students the ability to think, to reflect, to learn on their own. We have been teaching as 'hit or miss'—blind shot in the dark alleys of dim teaching.

Training is shaped by the teacher educator's own conceptions, the current educational thinking and influences from the society and outside the classroom. While these are told theoretically to the student, no attempt is made to integrate them and to demonstrate them in actual practice. When the teachers deal with skills and lesson planning no mention is made of the above. Therefore, when the students go to the class they do so with a formal plan and fixed ideas. Not having been told how to modify the plan during its progress, the students fumble or continue teaching, creating a mismatch between the classroom and the reality

Our trainees' command of language is not good. The language component in teaching has hardly been given its due importance. The content knowledge of every subject is rated higher than its presentation. We have to provide a supportive atmosphere to the students, encouraging them to use language and thus further other positive learning behaviours.

We read so many different subjects during the course of our schooling and college. At that time we did not realise what role each of the subjects would play in our lives later. However, now we profit from seeing the links, and try to make sense of teaching. Similarly, our teachers may show the students to think about these links so they can see how the whole is composed of the parts and how each part is important in itself. By thus encouraging them to see the links the teachers will behave more as interpretation teachers rather than transmission teachers, which they mostly have been.

TE₂. Teacher educators exert great influence on teachers and the teachers, in turn, follow them. Unless the teacher educators change their practices, the expected change in the professional practices of teachers cannot be obtained.

Our society is continuously evolving and we often initiate reforms in teacher education to address the emerging changes. Teacher educators plan and implement the reforms but fail to change themselves. If the advocates of reforms themselves do not change, how do we expect the reform to take roots? We are mechanical in our approaches and the form of performing the tasks—the style and form of work and approaches—needs to be updated to realise the goals of reform. Unfortunately, this does not happen, and my experiences tell the same story. The course provides inputs for professional development, yet we continue to practise in the old form. For instance, lesson plans are often drawn up based on a set of questions and answers paving the way for verbal communication. Space for reflection or active involvement is much less. The same pattern is seen during classroom transactions. We schedule sessions on teaching skills but they do not yield the desired result. We need to demonstrate or show the performing part of the skills. The waves of change should originate from us and gradually spread to student teachers. We need to move out of the present state of our practice.

Theoretical Ideas and Transactions

In this section we explore the nature of theoretical ideas and the way such ideas are imparted. Our experiences indicate that there are limitations in the treatment of theoretical ideas. The first instance is that relevant theoretical formulations are not provided to explain certain components. The second instance reflects lack of specificity and details of theoretical formulations for providing meaningful explanations of component(s) and the engagement through the conventional mode of transactions. Each of them is examined further to illustrate the prevailing trend.

Theoretical formulations form an essentiality for developing insights into professional practices and the absence of such formulations invariably does not pave the way for gaining professional autonomy. For instance, let us consider the component-skills in teaching where the student teachers are often exposed to the various skills without providing the related theoretical ideas to develop an insight into the way they are done. The student teachers are given situations to practise various skills (e.g. introducing a lesson or citing examples or questioning for summarising, etc.) without providing the ideas of fragmentation of behaviour. What we practise is fragmentation of teaching behaviour into a number of component parts and each is taught and practised separately with the aim to integrate them (the parts) while performing the act of teaching (the whole). Fragmentation of teaching behaviour into parts is rooted in the behaviouristic tradition of thought which focuses on indivisible substantial

elements to which behaviour can be reduced. The teaching behaviour is explored and studied by decomposing into constituent elements. This enables us to discover the parts, their nature, their relationships among themselves and also to discern their relationships to the whole (teaching behaviour). Obviously, identification of the nature and relationships paves the way for effecting corrections and fostering development of teaching behaviour. Apart from the indivisible parts, observation and verification of behaviour form the roots of the behaviouristic tradition. A teaching approach rooted well in the behaviouristic tradition stresses on observability and verifiability of teaching behaviour as conditions for ensuring objectivity. Skills that are practised or the performance of teaching provide the instances for observation and verification of the concerned behaviours. Further, a deep look into the lesson plan format outlined around objectives, teacher activities, student activities, etc. provides an array of instances which can be observed and verified. For instance, formulation of objectives in behavioural terms, such as recall, identify, discriminate, verify, apply, analyse, generalise, and the like, set the conditions for observation and verification of occurrence of such behaviours. Though the skills in teaching and the lesson plan format are well clothed in behaviouristic ideas, student teachers are rarely exposed to such ideas. In fact, without the essential theoretical insights, the practice of skills or the lesson plan often takes a mechanical route; thereby, self-directed

actions on the part of student teachers rarely find a place.

However, it is essential to cross the behaviouristic boundaries, and with the emergence of cognitive psychology, there has been a shift in the ideas that are significant for teaching and learning. Ideas such as thinking process, cognitive structure (described variously as knowledge frameworks, schemata, mental models), higher-order thinking, learning styles, etc. have started seeking attention. Likewise, constructivist views of learning and reflective teaching have found space in the teacher education curriculum. Mere recognition of the relevance of these ideas does not yield any result unless we employ active transaction strategies and engage these ideas for meaningful interpretation of the schooling system. This points to the second limitation indicating lack of specificity and details of theoretical ideas and the stress on the conventional mode of transactions.

The curriculum provides space for the transaction of cognitive structure. Adopting the conventional mode of transactions, teacher educators expose the ideas related to cognitive structure without making any effort for a meaningful transaction to enable student teachers to find meaning in the use of cognitive structure while performing their task. For example, providing simple instances such as asking to express the idea of volume or a transport system or any other in verbal form or through diagram would help the student teachers to discover the cognitive structures of such ideas formulated by them and to make a

meaningful interpretation of the teaching-learning process. Similarly, in the treatment of individual differences, using the conventional mode of transactions teacher educators lead them through differences from the perspectives of intelligence, aptitude, attitude, etc. They can decentralise the approach by getting student teachers to state the meaning of teaching or any other concept which would illustrate how they are differentiated by the differences in the cognitive structures on teaching constructed by them. It will be professionally meaningful if the dimensions of individual differences are reformulated with the focus on ability to learn, domain-specific knowledge, motivation to learn and other such dimensions which would help in getting a more realistic picture in classroom situations.

As teacher educators we are often good at imparting ideas in the form of generalisations without specificity or details, giving the impression that they are true in all situations or for all. Our experiences indicate that the treatment of the ideas related to advance organiser, as an instance, provide interesting evidence in this context. The ideas related to advance organiser and its influence on cognitive processing in terms of providing prerequisite knowledge or building external connections are presented in such a form that one gets the impression that advance organiser facilitates learning, presumably for all learners. In reality, it is not true. Evidence emerging from researches in this area fails to yield a single answer to the question: does advance organiser facilitate learning?

Instead, it may be more logical to ask the question: under what conditions do advance organisers foster learning (Mayer, 1987)? Evidence points out that advance organisers are useful when students lack the prerequisite knowledge that is essential for understanding the material to be learned. On the other hand, if the students already possess the required prerequisite knowledge advance organisers are not needed. Likewise, if the goal is verbatim retention of specific information, advance organisers are not helpful. Further, advance organisers in the form of concrete analogies facilitate the learner to understand and organise well the information. Attempts are needed to relate the prerequisite knowledge with the long-term memory or the process of reorganising information in working memory (building internal connections) or the transfer of relevant prerequisite knowledge from long-term memory to working memory (building external connections). In the absence of specificity and details of ideas that are important for negotiating well on the path to professionalism, the student teachers do not make gainful progress from theoretical ideas.

It is equally important to consider students' cultural diversity and the inputs for preparing the student teachers to address such diversity. In fact, the Indian society is stratified along ethnicity, caste, social class, gender, language and similar factors, and the people's ways of thinking and behaving are deeply influenced by such factors. The student teachers are invariably exposed to the stratified nature of Indian society and the prevailing nature of social inequality. What is critical in this

context is specificity and details, and departure from the conventional mode of transaction of cultural diversity. In other words, to understand the students, prospective teachers need to develop socio-cultural consciousness—which means that people's ways of thinking and behaving are deeply influenced by factors like ethnicity, caste, social class, gender and language. A teacher, in this situation, needs to recognise that there are multiple ways of perceiving reality and these ways are influenced by one's location in the social order (Villegas and Lucas, 2002). Though the student teachers are told about the inequality and the way schools are providing opportunity for all, regardless of social background, it is essential to get into deeper dimensions, particularly in the context of multicultural setting. The views of modern and post-modern groups provide interesting insights in this situation. The former group presumes that different cultural groups have unequal levels of intellectual, economic and political progress, and advance arguments for the existence of superior or inferior groups. On the other hand, the post-modern group rejects such an assumption by stating that cultures are neither inferior nor superior; they are simply different. Student teachers need to reflect and critically analyse such views, and recognise multiple perspectives and give meaning to the idea of living together. Further, in each culture certain positions are accorded greater status than others. The status differentiation generates differential access to power and paves the way for social inequality. They need to comprehend that social inequalities

are produced and perpetuated through systematic discrimination. They also need to critically examine the role that schools play in the reproduction of social inequality and the legitimisation process through their curricular, pedagogical and evaluation practices.

The existence of multicultural groups in Indian society is a reality. The student teachers need to recognise the culturally diverse backgrounds of students and plurality of ways of thinking, learning and behaving. It is important to realise that all students, not just those from dominant groups, are capable of learning. Teachers who recognise cultural differences need to affirm that students from minor groups are capable of learning even when such children enter school with ways of thinking and behaving that differ from the dominant cultural groups. They need to develop a positive orientation towards student diversity and pluralist ways of thinking and behaving. In fact, they need to be given situations to reflect on and analyse the field realities of Indian society and the schooling system. As teacher educators we need to go beyond transmission of information and creating awareness of the ways of teaching, and help student teachers to develop socio-cultural consciousness. It means that the teacher educators need to change the way they perform their professional task.

With the emergence of constructivism, it is important that student teachers develop knowledge on how learners construct knowledge; they should also be capable of providing learners knowledge-construction. At the heart of the constructivist idea is that the conceptions held by each individual

guide understanding. The knowledge about the world outside is viewed as human construction. A learner actively constructs or creates his or her own knowledge on the basis of knowledge already held. It means that learners use their prior knowledge to give meaning to the new input (Piaget, 1977). The information that is external to the learner becomes knowledge only and only when he or she gives meaning to it. The knowledge the learner brings to school forms the key component for learning and the teacher needs to build bridges between what the learner knows and the new idea that is to be learned. This demands engaging learners in active learning involving thinking, observing, questioning, analysing and interpreting the information. Of course, considering the diverse backgrounds of learners, they need not possess the same cognitive structures or knowledge frameworks and may not construct the same understandings of the new idea. Certainly, the teachers need to be capable of adjusting the teaching strategies to meet the learners' needs and promote learning based on their strength. The stress that constructivism places on higher-order thinking promotes critical thinking, problem-solving, collaboration and recognition of multiple perspectives in contrast to the conventional mode of transaction.

Mere theoretical explanations about critical thinking or problem-solving or inquiry or discovery or multiple perspectives or cultural consciousness or knowledge construction will not yield the desired results among the student teachers. They should be given situations to involve and experience

critical thinking or problem-solving or discovery or knowledge construction process as learners to build their capacity for adopting such strategies while teaching. For instance, the views of students and teacher educators (cited earlier) point out that pedagogical strategies—problem-solving or inquiry or cooperative learning—are told and are neither demonstrated nor practised. The implication is that teacher educators need to change their thinking and professional practices and model active instructional practices for their students. In other words, teacher educators need to change their professional practices in tune with the reform in the teacher preparation course, and in case they fail, the reform fails to take off.

The Human Factor

We may design a well-structured course for the preparation of teachers and proceed to implement the course with the promise that it would steer clear of the prevailing limitations and yield better results. The course may be well structured with all the inputs for the development of professionalism but that alone does not guarantee success. The human element that manipulates and operationalises the course components seeks attention. The human being who fills the role of teacher educator is the most important factor in teacher training. The reason why the human factor matters so decisively is that the efficacy of the course pivots around who the person is (Hansen, 2001). His or her thought, knowledge, professional skills and mindset for transforming individuals as teachers can make all the difference that matters. Teacher educators' aim to

help trainees to develop as good teachers, a conviction, again spotlights the human factor. The moral passion they have toward their work fuels both their individuality and their professional performance. The level of professional thought they hold matters in the treatment of pedagogical skills and strategies. But the reality is that we witness restructuring of the teacher education programme with the

focus on the development of professionalism without considering the human factor involved, and such exercises invariably fail to attain the desired change. In fact, teacher educators initiate change in teacher preparation but often they fail to follow the line of change in professional practice, and this is the reason why the human factor assumes criticality in reform effort

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Towards a Fusion of Religio-cultural Practices and Scientific Literacy with a Prophylactic Objective

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Abstract

The authors discuss the operationally sustained form of culture through its organic linkage with society and indicate the persistence of functional on the basis of religious practices. Exemplars of religio-cultural practices having prophylactic objectives are presented. Scientific literacy from both axiomatic and evaluative senses is outlined. A strategic model for fusing scientific literacy and religio-cultural practices is proposed. The model has two broad objectives: (i) Minimal resistance for its acceptance by any society irrespective of religious, cultural and ethnic compulsions, and (ii) the good health of the inmates of a society.

Key Words: Religio-cultural practices, Scientific Literacy

Culture

The most incomprehensible feature of culture is that it is comprehensible. An exact definition of culture is perhaps elusive, because experts try to correlate it with art and architecture, music and dance, language and literary forms, social practices and norms, economic advances and policy perspectives, legal

structures and issues, political ethos and practice, superstitions and taboos, religion and spiritual endeavours, ethnicity and ritual forms, manifestation of excellence and striving for perfection, and so on—an unending list of structural manifestations. People talk of even the culture of poverty. From a more realistic point of view, Jawaharlal Nehru observed (1997)

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"Does culture mean some inner growth in the man? Of course it must. Does it mean the way he behaves to others? Certainly it must. Does it mean the capacity to understand the other person? I suppose so. Does it mean the capacity to make yourself understood by the other person? I suppose so. It means all that."

Or, in other words, our behaviour and our personality define our culture. If the elements of our personality promote a healthy and happy community life then we are cultured persons, otherwise not.

On the other hand, stripped of its political dimensions and power parameters in terms of classes, institutions, and social practices, culture has been reduced to an anthropological or sociological object of study that has not only obscured more than it has revealed, but also, more often than not, has tilted over into an apology for the *status quo*. For example, in the early but influential work of Kroeber and Kluckhohn (1952) the essential core of culture consisted of traditional ideas and practices. After them, theorists such as Kroeber and Parson (1958) further reduced 'culture' to a form of cultural idealism, or, as in the work of Geertz (1972), to the study of the semiotic field.

Further, when people talk of culture, they invoke sub-culture and sub-sub-culture till it becomes a cloud of dust. They even talk of 'invasion of culture', the assimilation of culture, in the framework of an evolving system. But when such an assimilation tends to affect the basic structure of any culture then that culture either offers resistance

by shutting itself up against other influences and reaches a state of isolation which obviously affects its growth, or it gets extinct in that process of external effects.

Then again, which culture we are talking of? In the context of Indian culture, is it the culture as we now see through the eyes given to us by western philosophers and thinkers, like Max Mueller, or is it the historical review of our culture as recorded in books in terms of Vedas and Upanishads, or is it the indigenous culture which perhaps now exists in its pristine virgin form in some tribal belt? It is difficult to obtain a conclusive answer on such issues.

However, amongst all the diversities and variations, currents and cross-currents, issues and questions, classifications and taxonomies, one point has a certain validity. And that is any culture, to survive over the ages, must have a certain depth and certain roots accumulated over generations of experiences and wisdom. And these manifest themselves as cultural practices which define the social bond between the individuals of any community. Many a time, a society is even defined by clearly discernible cultural practices. In that sense, culture is organically linked with life.

Religion

Dictionaries say: Religion is a system of belief in the worship of a supernatural power or God. Does this mean that religion remains chained in the confines of temples, mosques, churches or gurudwaras? Perhaps not. Because, if one takes the entire mass of any community as a single entity, though

everybody belongs to and believes in, say, a single religion, all do not necessarily visit these ivory domes. Does this then mean that religion is defined in our priceless scriptures, like the Vedas, Upanishads, Koran, Bible, etc ? If that is so, then again how many of a community have actually read these scriptures? In fact if we say that 5% of the Hindus must have read the Gita, the often referred and quoted scripture, then perhaps it will be on the higher side than the reality Does then religion mean the sayings, preachings, sermons, writing or edicts of the seers and saints of any religion? If that is so, how many of any community have again actually read them and put them into practice? Perhaps only a negligible percentage.

However, in spite of all these we know that religion exists and has survived over the ages This existential persistence stems from the fact that religion, being an axiological subset of culture also carries one of its main characteristics, i.e. to bind together, because that is what its generic word "*relegette*" means. It provides a strong bond between persons, between communities and between states. If one concentrates on an operational definition of religion and not an axiomatic one, then for the common man, the man who ultimately defines society, religion is not confined inside temples, mosques, churches or gurudwaras, nor is it held captive inside religious Granthas, Puranas, Bible, Koran For him religion is manifested through the religious practices If a Hindu goes to a Shiva temple located, say, in New York, and finds there that *tuls* leaves are being offered as *prasad*, he will protest and raise his eyebrows,

because the accepted practice prohibits that It is in this zone of practices that culture and religion overlap each other profusely. And if one analyses them one will observe that *culture defines religion and religion in turn refines culture.*

Scientific Literacy

The term 'literacy' is usually interpreted as the ability to read and write although the classical meaning of the term 'literate' (derived from the Latin term 'litteratus') described a person who was learned (Clanchy, 1979) With time, the term 'literacy' got extended to new forms, like, computer literacy, cultural literacy, political literacy and scientific literacy. Pella et al 's (1966) work on the delineation of scientific literacy as a concept was elaborated on by Showalter (1974), Rubba and Anderson (1978) who identified seven dimensions, which they feel define scientific literacy, on the basis of an integrated review of 15 years of relevant literature. These are (Laugksch, 2000) given below.

The scientifically literate person'

- understands the nature of scientific knowledge,
- accurately applies appropriate science concepts, principles, laws, and theories in interacting with his universe,
- uses processes of science in solving problems, making decisions, and furthering his own understanding of the universe,
- interacts with the various aspects of his universe in a way that is consistent with the values that underlie science,

- understands and appreciates the joint enterprises of science and technology and the interrelationship of these with each and with other aspect of society,
- has developed a richer, more satisfying, more exciting view of the universe as a result of his science education and continues to extend this education throughout his life,
- has developed numerous manipulative skills associated with science and technology

All the seven dimensions, stated above, have an academic overtone. Keeping in view, in the Indian context, the common mass, more than 60% of which stay in rural and marginalised sectors and around 10% of which are tribals. several questions arise in mind.

- Will they actually welcome such a knowledge base, in terms of time and interest, when they are unable to fulfil their pressing basic needs?
- Even if they welcome such an infusion, can we generate an

active and responsible mechanism to orient/educate all of them, many of whom stay in accessible areas?

- Even if that is achieved, will we be able to sustain it over years instead of making it a one-time high dose, in which case it is likely to face cognitive rejection/highly reduced assimilation?
- Even if that is possible, do we have the trained work force to execute the plan?

The ground reality is: to all the above questions the answer is perhaps 'NO' In such a framework any action plan to achieve any/all of the seven dimensions will be as futile as the proverbial search for a black cat in a dark room where it is not. And so any operational design, however meticulously planned, based on the above seven dimensions will have little functional value in the Indian context.

A more pragmatic approach could be to look at the term 'scientific literacy', not in its descriptive sense, as above, but from the evaluative sense of the term. Then three different interpretations emerge for Scientific Literate as:

TABLE 1

Reference	Learned	Competent	Function (Minimally)
Snow (1962)	X		
Shen (1975)			X
Branscomb (1981)	X		X
Miller (1983)			X
Arons (1983)	X		
Hirsch (1987)		X	
Hazen and Trefil (1991)		X	
Shamos (1995)	X	X	X

- Learned (A)
- Competent (B)
- Able to function in a society (C)

This classification is based on a review of literature as presented in brief in Table 1 (Laugksch, 2000)

If we consider the masses which define the society, a large percentage of them comprise (in the Indian frame):

- total illiterates
- drop-outs within the primary level of education
- group for whom the primary level is the terminal stage of education
- drop-outs within the secondary level of education
- group that has failed at the secondary level

For the scientific literacy of a society comprising groups such as the above, we perhaps have to think in terms of item 'C', or subdimensions of it. In fact, the declaration of the World Conference on Education For All, held at Jomtien 1990, comes handy in this respect. The declaration demands that literacy, in general (in our case scientific literacy, in particular), should make persons able to participate fully to improve the quality of their lives

It is in this context that scientific literacy and religio-cultural practices have a zone of overlap. In fact, there is a growing body of scholarship which is of the opinion that an important component of scientific literacy is an understanding of the reciprocal impact of science and the general culture

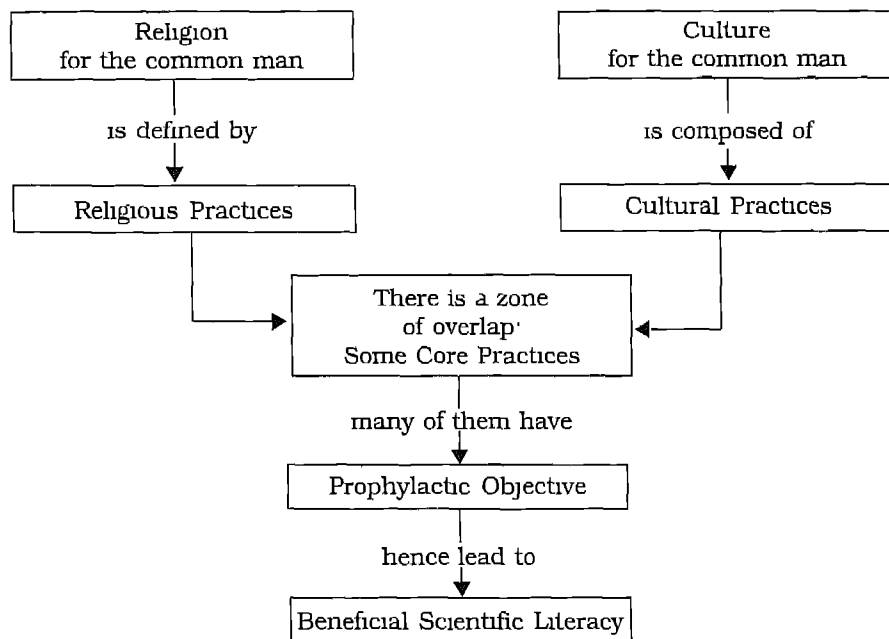


FIG. 1 Interdependence of religio-cultural practices and beneficial scientific literacy

on each other (Norman, 1998). It is now strongly believed that *science shapes culture and, in turn, culture demands re-structure science*. This interplay between religion, culture and scientific literacy is depicted in Fig 1

Prophylactic Objective

The seers and saints of ancient India had the experience, knowledge, erudition and intuition to realise

- the zone of overlap between religion, culture as practised by the masses and scientific literacy (as per their connotation),
- the importance of the interplay between them,
- the incorporation of practices having scientific basis to "improve the quality of lives" of the masses

Their limitations were:

- lack of mobility which restricted their reach to every community and locality,
- likely lack of a second generation who will be equally revered and obeyed by the masses and hence can transmit the suggestions of the seers and saints,
- lack of any other dependable mode of communication

So they had to find a way out, because they were concerned for the well-being of the masses. What they did (perhaps) was that they:

- restricted scientific literacy to improving the health of the

masses and thus identified only *those simple activities which would prevent the occurrence of diseases (prophylactic objective)*,

- incorporated them into the structure of religio-cultural practices so that they could be transmitted from generation to generation, and the masses, even if illiterates, would follow them and remain healthy.

With the health of the masses uppermost in their mind, they must have planned this strategy so as to generate a *Functional Learning Society* and not a *Learned Learning Society*

It is worthwhile to submit few examples here, because in the case of most of such religio-cultural practices we just reject them on an *ad hoc* basis, calling them meaningless superstitions, since we look at them with eyes borrowed from the West.

Example 1

Take the case of childbirth. The common religio-cultural practice is that the child and the mother are kept in isolation for 21 days and both go through heat treatment during that period.

Prophylactic Basis: When Armstrong came back from the moon he was put in quarantine as a preventive measure against: (1) any possible virus he might have contacted on the moon's surface, and/or (2) any metabolic change he might have gone through which would render him more susceptible to infection.

In the case under analysis, the child was in a different and protected environment—the mother's womb—for

10 months, and sudden exposure and contact with others in the new environment would increase the probability of the child's catching infections. Moreover, the mother is also physically weak and prone to infection. So put both of them under quarantine as part of a religio-cultural practice.

Further, we now know scientifically that heat treatment improves immunity, promotes tonicity of the muscles and increases flexibility

Example 2

The offering of either *tulsi* or *betel* leaves as *prasad* when one visits a temple. (Note. Visiting a temple daily was one of the religio-cultural practices.)

Prophylactic Basis: It is now well known that *tulsi* and *betel* leaves have curative properties and they prevent the onset of many diseases if taken daily.

Example 3

After taking a bath at dawn, *Surya Namaskar*, when the sun rises in the east was one of the prescribed religio-cultural practices.

Prophylactic Basis: It is now scientifically established that the early morning sunrays improve the tonicity of neural secretions. Further, metabolism of certain vitamins is also influenced. Moreover, *Surya Namaskar*, when performed in the prescribed posture promotes strength of the spine and backbone

Example 4

The eating of a betel leaf after every meal in the same way as Lord Jagannath is offered a betel leaf daily after his meals

(to emphasise that it is a religio-cultural practice).

Prophylactic Basis: The juice of the betel leaf is an accepted digestive. Lime taken with the betel leaf is good for the teeth. Then clove and cardamom used as spices in the betel are to fight bacteria, prevent tooth decay and remove any foul odour from the mouth. It may be noted that the prescribed betel leaf is not to carry tobacco or *zarda*, which were known to be harmful and are not included in the betel leaf offered to Lord Jagannath.

The authors know a host of such religio-cultural practices which were infused into the social system, observed by the masses and have a strong prophylactic objective with a scientific basis.

Future Strategies

If good health and prevention of diseases of the masses can be taken as a primary objective of scientific literacy, then we have to:

- learn from our culture and heritage,
- develop strategies to make them richer, and
- in the process help the masses to maintain good health.

The following strategies may be adopted:

- Identify religio-cultural practices which have a scientific basis.
- Catalogue, analyse and map them as per culture and level of education.
- List common core items which can be promoted and propagated through various processes of mass communica-

tion, so that every culture feels their practices are respected and accepted.

- Develop other scientific literacy activities which can be blended into the culture as acceptable practices.
- Bring out a fusion between the past practices and the new-identified practices to minimise cultural resistance.
- Develop a committed group for this action plan if the benefits are to go to the system.

The advantages of these strategies are the following:

- They do not need any special teacher to promote this functional scientific literacy.

- They improve dynamic interaction between the school and the community.
- They develop a scientific lifestyle by accepting the contextual cultural contributions and thus minimise cultural resistance which is normally offered to parachuted scientific literacy.
- Identification, classification and implementation are feasible processes.
- Functional scientific literacy is harmoniously blended with culture and not imposed as a pedagogical requirement.
- One does not necessarily have to revise the curriculum and then rewrite the textbooks

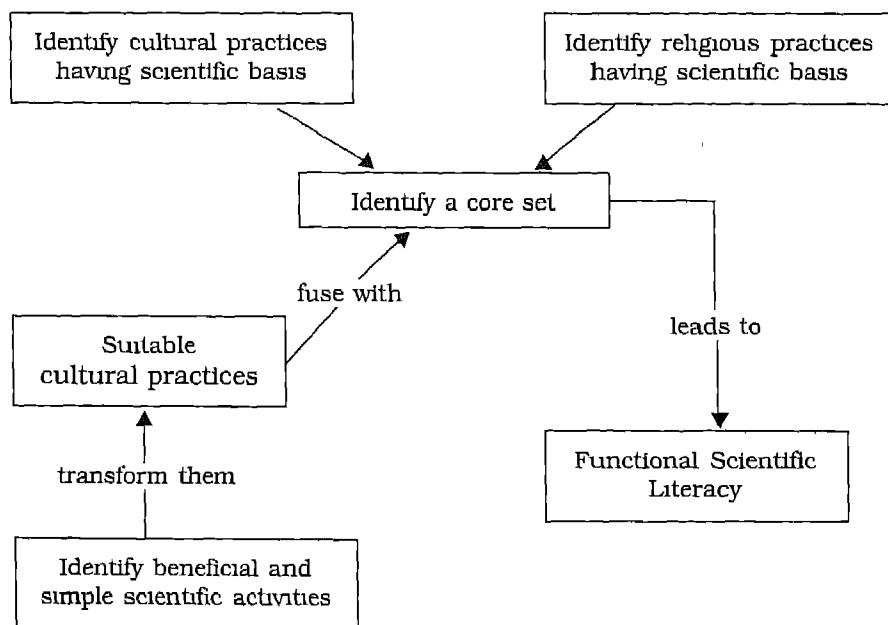


FIG 2: Proposed model of functional scientific literacy with minimal cultural resistance

- These strategies promote a learning society through natural education

Our model for a functional scientific literacy through the above strategies, which produce minimal cultural resistance is shown in Fig 2.

Conclusion

To conclude, we note that many of us with our vision borrowed from western thinkers immediately reject our religio-cultural practices either as humbug or as superstition. We take pride in such rejection and denigrate those who try to follow them, call them outdated and assume that we are modern. We never make an effort to sit down, analyse all the practices and then comment. We are happy to call our seers and saints persons who have outlived their utility. But through this study we advocate that it is now time to take a re-look at our religio-cultural practices. It cannot be a

coincidence that many of these practices have a scientific basis with the object of seeing the entire community lead to a healthy life. Science as propagated in the classroom can never reach the masses and thus cannot generate scientific literacy in the masses. For scientific literacy to really manifest itself in the society with the sole aim of maximum benefit to the maximum number of persons, science and culture must supplement each other; otherwise, because of lack of the contextual functionality of science, the masses may offer resistance to accept it. On the other hand, following the footsteps of our seers and saints, if we can make some of the scientific practices slowly percolate into the natural firmament of cultural practices then they are likely to be accepted as a process of natural education, and the past, in which the masses are culturally situated, will then fuse with the present and generate a scientifically literate future.

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Professional Development of Teachers: Practice and Promise

V. RAMDAS*

Abstract

This paper is a result of two small scale participatory evaluation studies of in-service training programmes. The studies were conducted as part of a project to train teacher educators in evaluation of in-service programmes. Using a multi-method research approach, the studies throw light on the existing practices with regard to the programmes for the professional development of teachers. Highlighting various concerns of in-service programmes, the author argues that teachers cannot use their knowledge, skills, or attitudes, if the work environment is contradictory. The negative effects due to disincentives, unclear expectations, lack of interpersonal support, absence of atmosphere for peer-group learning, and poor follow-up and supervision can greatly diminish the effects of the professional development initiatives.

Key Words. In-service Teacher Education, Professional Development of Teachers

Introduction

A variety of agencies organise in-service programmes in India at different levels — national, state and district — for the professional development of school teachers. Such programmes are generally formulated in response to the needs of the priority individuals and of the educational community as a whole. However, it is observed that many of these programmes do not take into

account the emerging concerns of teachers' professional development experience (Ramdas, 2001). Realising the importance of need-based planning and implementation of in-service programmes for the professional development of teachers, the Regional Institute of Education, Ajmer, a constituent unit of the NCERT, has undertaken a project to train teacher educators on evaluation of in-service programmes. As part of this project two

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training courses have been organised with the objectives: (i) to develop competence among the personnel in evaluation of in-service training programmes, and (ii) to study the effectiveness of some of the selected ongoing programmes. This paper is the result of two evaluation studies conducted as part of this project.

Why In-service Programmes?

The professional development of teachers plays a vital role in improving the teaching-learning process. The concerns of new theories, the findings of educational researches, and development of new teaching material and instructional strategies will remain fruitless unless these innovations are translated into action in the classroom. The in-service programme is a powerful means to bring the benefits of the new ideas into the actual teaching-learning process. Such programmes help in moulding better teachers by improving their knowledge, providing ways to help them develop their competence, empowering them to undertake innovative practices and by instilling in them a desire to do a better job of teaching.

Far-reaching educational reforms and the constructive policy of the government to start large-scale innovations in the educational system and rapid developments in technology and social conditions also call for the teachers to develop their competence in incorporating the benefits of these advancements into their day-to-day school practices. Pre-service education, as it can only contribute to an initial competence to start a career as a teacher,

cannot meet the emerging academic needs of the practitioners. And teaching is so complex that there is no realistic limit to improvement in teaching practice. Moreover, the new teachers must learn to apply their knowledge and skills on the job; therefore, in-service education becomes an extension of pre-service preparation.

The general aim of teacher enhancement programmes is to provide the teachers information, develop their competence and promote a positive attitude towards effective implementation of innovations. The specific objectives of such programmes can be to: expose the teachers to the concept of the new curriculum, expose them to the advancement in the content area, develop their pedagogical content knowledge, develop teachers' skills in evaluating pupils' performance, and so on. However, in-service programmes by themselves cannot guarantee improved practice. For, skills are mastered and new knowledge is utilised through continuous personal striving towards greater proficiency by the practitioners. Consequently, in-service programmes should be viewed as a guide and stimulus rather than as a warranty of immediate change in the existing practice. After all, teaching is a profession which demands multifarious competences from its practitioners and these competences are developed through prolonged and intelligent practice.

Concerns in Course Transaction

An in-service programme takes numerous forms. Commonplace programmes include formal short-term

courses where ideas are presented in visualised lectures or demonstration format. Other programmes utilise a workshop mode which puts emphasis on the active involvement of participants in the course transaction, through discussion, demonstration, and role-playing. A workshop can address individual differences in participants' needs and interests by using flexible procedures differentiating activities and small subgroups. A workshop usually seeks to promote learning that is directly and immediately applicable to the classroom practices of the teachers so that integration of training with the job assignment of the teachers is made possible. However, in order to consummate this integration, in-service programmes need to be reality oriented, helpful in developing new skills and facilitative of the application of those skills in the context of the classroom. This, in turn, asks for individualising the training for teachers by using techniques like diagnostic evaluation, simulations, games, laboratory training, field trips, micro teaching, etc., that can offer simulating, involving activities and promote concept formation as well as skill development. Therefore, the course transaction should be more 'participant centred' to build in their expertise (Luff, 1999), and in order to create a participant-centred in-service programme, in-service directors need to attend to the in-service goals, content and training process (Sparks, 1983).

The Research Approach

As part of the aforesaid project, two evaluation studies have been undertaken

to assess the effectiveness of in-service programmes conducted for the state of Himachal Pradesh and the Union Territory of Chandigarh. Identification of concerns and understanding of issues related to the programmes were sought through a case-study approach based on the participatory evaluation model. The case-study approach was adopted since it allows one to discern ongoing behaviour, which is central in determining the effectiveness of the courses, as it occurs (Ibrahim, 1991, Denzin and Lincoln, 1994). The participatory-evaluation model was employed because the studies were conducted as part of the field-based training on programme evaluation for the in-service programme planners of the states concerned.

The participatory approach in evaluation is considered as an effective method to assess the projects and to empower the personnel. It, through the direct involvement of educational practitioners, strives to provide a shared knowledge base to all parties who are involved in or affected by the decision on such projects. The explicit goals of participatory evaluation, according to Cousins and Earl (1995), are "utilisation oriented" and, in the words of Patton, are "intended use by intended users" (cited in Cousins and Earl, 1995).

The case studies were conducted in October 1999 and November 2000. The programmes studied were short-duration courses for teachers and teacher educators. The issues related to the programmes were gathered from different viewpoints—assumptions held by the participants and by those who

were responsible for planning and implementing the programmes—were investigated and conclusions were made based on the data obtained through observation, questionnaires and focus-group interviews.

The concurrent use of observation, questionnaire and focus-group interview enabled the elicitation of as much information as possible on the programmes studied, and facilitated triangulation of information from different sources. A multimethod-research approach, according to Cohen and Manion (1980), reduces the chances that any inconsistent findings are attributed to similarities of methods. It increases both the validity and the reliability of evaluation data (Patton, 1980)

Observation

The two programmes observed are detailed in Table 1. All the sessions of the programmes were observed to ascertain the effectiveness of presentation and transaction with reference to involvement of participants, interaction between the participants and the resource persons on the one hand and among the participants themselves on the other, and opportunities for the participants to reflect upon their practice and collaborative learning. The duration of the sessions observed ranged from one and a half to two hours.

Questionnaire

Two types of questionnaires, as described below, were used to gather information on the programmes studied

(a) Daily Information Sheet

This questionnaire contained descriptive questions to ascertain participants' views, comments, experience and aspirations on different aspects of the training sessions like mode of presentation, knowledge and experience gained from each session, limitation of transaction, and suggestions for improvement. The questionnaires were distributed to all the participants before each day's sessions and were collected at the end of the day.

(b) Participant Questionnaire

This questionnaire contained statements on different aspects of the programmes for which the participants were required to give their ratings on a five-point scale. The items were generated to elicit the respondents' feelings and impressions of the course and its utility for their practices. The questionnaire was distributed to all the participants who were present on the last days of the two programmes observed. The number of questionnaires distributed and collected were as follows: (a) Programme I: 45, returned 41 (91.1 per cent), (b) Programme II: 30, returned 21 (70 per cent). A simple percentage of responses to each item was calculated to analyse the data.

Focus Group Interview

This was used to ascertain the participants' expectation from the experience of the programme with regard to content, transaction, involvement of participants, interaction, management of training sessions, utility of the

programme, and other related aspects. A focus-group interview was conducted with eight and five participants of Programmes I and II, respectively. The interview was conducted just after the completion of the final sessions of the programmes by focussing on one aspect at a time. The focus-group members were fully free to express their critical views about the programme.

Programme Information Proforma

In addition to the above data-gathering devices a programme-information proforma was used to collect details on the formulation of the programmes. The information sought through this proforma included mainly the rationale of the programmes, methods of needs assessment, specific objectives, transactional procedures, profile of the resource persons involved, the support material, budget allocation, time schedule, modalities to obtain feedback from the participants and plan for the follow-up. These details were collected through discussion with the programme planners.

Main Findings

Programme Planning

Out of the two programmes observed, the first one was designed by the State Institute of Education, Chandigarh, as part of its professional development courses for the primary school teachers in the Union Territory. The second programme was planned by the Citizenship Development Society, a New Delhi based non-governmental organisation. In both the cases the

course contents were decided by the respective programme planners without ascertaining the field-based needs in advance through proper discussion with the practising teachers or the personnel concerned.

It was found that the topics or themes transacted in Programme I were seldom innovative, in contrast to what is reflected by the title and objectives set for the programme. In the case of Programme II, though the themes were relevant to the practices of the participants, much deviation from the topics was observed in the actual transaction of some of the crucial sessions. These observations reflect two concerns of programme planning: (a) identification of the training needs of the participants, and (b) sharing of the expectation of the programme directors with the resource persons chosen for the training. In neither of the cases the training needs of the participants and the existing practices were studied before, and taken into account in, the planning and conduct of the programmes. Nor was a meeting or workshop held for the resource persons to discuss the context and methods of these programmes so as to draw up what exactly had to be delivered to the course participants. On the contrary, the resource persons of Programme I were asked to deliver lectures on any of the topics of their choice, but under the broad umbrella of the title of the programme, whereas in the case of Programme II, though the topics were pre-decided by the planners, what actually should be transacted was completely left to the autonomy of the resource persons.

Transactional Processes

The programmes observed laid emphasis on information-giving rather than on participants' reflection on their own practices. The dominant mode of transaction in both the programmes was the lecture. The basis of communication seemed to be what the resource persons and the programme directors wanted to say rather than what the participants wanted to discuss. As a result, the teachers who attended Programme I were not provided opportunities to discuss the 'innovative' methods of teaching presented, nor could they share their own classroom practices. Similarly, there was not much scope in Programme II for the participants to discuss the concerns of value education. This apparently contradicts the general communication theory which, in the words of Ibrahim (1991), "assumes that the effectiveness of communication is based on what is received rather than the message or information that is given".

The importance given to the lecture as the predominant mode of transaction is understandable in view of the fact that the programmes observed were short-duration courses. But, while the need to give information was the primary concern of the programme directors and the resource persons, the neglect in taking the field-based needs of the participants into account seemed to have affected the programmes' usefulness. The question of perceived needs makes a difference in terms of the impact of a programme (Fullan, 1982). Therefore, the needs of the participants should be

assessed and taken into consideration in the planning and conduct of in-service programmes.

The findings of the study also reveal that the participants of the programmes preferred to discuss the topics in depth and not simply listen to (take) what the resource persons wanted to tell (deliver). Contrary to these expectations, the programmes were predominantly lecture dominated with the resource persons as 'sages on stage'. Relatively little time was spent on discussion in both the programmes. This indicates that there was a total neglect of the 'experience of the participants'. It seemed that not much importance was given to techniques such as group discussion, interactive exercises or syndicated thought-provoking sessions, which could maximise the teachers' active participation. To be effective, in-service programmes, suggests Ibrahim (1991).

"... courses need to be conducted by using techniques that provide maximum opportunities for participation in order to tap the experience of the participants. The concerns of in-service courses should not only be in the transmission of information but also in helping participants to acquire the understanding skills, attitudes and values necessary to support and sustain the implementation of the curriculum in schools. Courses need to be designed and conducted more in line with the process model rather than the content model."

Involvement of Participants

Involvement of the participants in the courses is an important indication of the extent to which the courses affect the teachers. However, determining the degree of involvement is a difficult problem for the evaluator to resolve. While it is easy to see how the participants are involved outwardly, their involvement at mental level cannot be easily decided, particularly in the form of quantitative indices or measurements. Keeping this difficulty in mind attempts were made to assess the degree of involvement of the participants by looking at the active interaction between the participants and resource persons, on the one hand, and the interaction among the participants on the other.

It was observed that in all the sessions, except the workshop session of Programme II, the greater part of the time was dominated by the resource persons. There were not much opportunities for the participants to discuss and interact with the resource persons and among themselves. Moreover, only a few participants asked questions or offered their opinion in both the programmes observed. Some of the comments made by the teachers are: "More time should be given for discussion", "Interaction between participants and resource persons should be promoted" and "Time for expressing participants' views must be given". This trend is not peculiar to these two programmes. The focus-group interview with the teachers and the open-ended questionnaire have revealed that the courses they had attended before were also similar in nature.

Self-Reflection and Collaborative Work

This study assumes that the teachers participating in in-service courses should be given the opportunity to reflect upon their practices and to engage in collaborative explorations in their field. This is based on the premise that the teachers being the professionals with specialised knowledge can advance their practices by pondering on their own experience and current actions, and a base of expert knowledge does not provide a set of rules to follow; rather, it provides heuristics that will guide decision-making and enable them to make decisions that are informed rather than reactive. In-service courses, therefore, should provide adequate opportunities for the participants to work collaboratively with peers and educational experts so that they can adopt new teaching strategies confidently and successfully. It is the teacher who has the final say on what is to be done when innovations are implemented in the classroom.

Looking from this perspective it is found that there were not much scope for the participants to reflect upon their classroom practices, nor were there opportunities for them to work collaboratively in both the programmes observed. The lack of opportunity for discussion and group activities has minimised the scope for utilising the experience of the participants to build up situations for better transaction in the programmes. Discussion enables the teachers to formulate ideas, learn from each other, become aware of alternative strategies and perspectives, internalise theory, critique their own and others'

ideas, become aware of their own assumptions and beliefs, and increase their pedagogical content knowledge.

However, it was worth noticing in Programme I that teachers from among the participants were taken as resource persons to lead two training sessions. This departure from the existing practice in the short-term courses, where the 'experts' dominate the show, adds to the emerging dimension of the in-service training programmes. This tapping of teachers' experience in leading training sessions is a good sign of defixing the teachers in their traditional role of classroom teaching and utilising their experience for professional development of the teachers by providing models from their own colleagues.

Conclusion and Implications

The findings of the study reveal a mixed impression of the effectiveness of the programmes observed. Although the participants opined that the programmes were useful for their classroom practices, they were also of the view in general that there was not much new knowledge they could gain from the programmes, nor could the programmes demonstrate novel ways to teach and learn. The evidence also suggests that the training needs of the teachers were not assessed and taken into account in the planning and conduct of the programmes. The extent and location of the problems that necessitated the programmes, the clarity of objectives to be achieved and the suitability of the interventions to resolve the problems have to be relooked at from the perspective of the training needs of the teachers and the classroom realities.

The delivery system and procedure adopted for implementation of the programmes also invite critical attention. It is appreciated that teachers from among the participants were included in the resource group. But, the transactions in the programmes were informative rather than experiential to the participants. The participants being experienced teachers and teacher educators have as much to contribute as to receive from the programme. Other factors such as unimpressive training techniques, time limitation, inclusion of several topics in the training sessions, tenability of some of the resource persons, absence of sufficient instructional material and failure in establishing a participant-friendly programme climate also seemed to affect the effectiveness of the programme.

Effective professional development experiences foster collegiality and collaboration; draw content from available knowledge base; involve participants in decisions about as many aspects of the professional development experience as possible; provide time to participate, reflect on and practise what is learned; provide leadership and sustained support; supply appropriate rewards and incentives; have designs that reflect the knowledge base on learning and change, and integrate both organisationally and instructionally with other staff development and change efforts. Therefore, it is suggested that the teachers participating in the in-service programmes have to be engaged in collaborative learning by focussing on fewer ideas more deeply. This entails that the professional development activities

be designed to open ways for the participants to reflect upon their learning, practice and experiences. The training facilitators have to plan interactive exercises, games and syndicated thought-provoking sessions, and be sensitive to and attend to teachers' needs.

In-service programmes concentrating on the knowledge of content and general pedagogy, although critical, alone cannot develop the teachers as competent professionals. Excellent teachers have a very special and unique kind of knowledge—pedagogical content knowledge—that must be developed through their professional learning experiences. This pedagogical content

knowledge, which is defined by Shulman (1987) as the ability to blend technique and content, including understanding how the given topics are related and how they are most effectively organised and presented in the classroom, must also be the focus of the professional development programmes. However, teachers cannot use their knowledge, skills or attitude if the work environment is contradictory. Negative effects due to disincentives, unclear expectations, lack of interpersonal support, absence of atmosphere for peer-group learning and poor follow-up action and supervision can greatly diminish the effects of the professional development programmes.

Table 1
Details of the Programmes Observed

<i>Programme</i>	<i>Date and Duration</i>	<i>No. of Participants</i>	<i>Major Objective of the Programme</i>
1. Training of teachers on Innovative Methods of Teaching social studies at upper primary level.	28-30 Oct 1999	46	To develop the Competencies of teachers in using innovative methods of teaching social studies
2. Seminar-cum-workshop on Value Education	9-10 Nov. 2000	35	To orient DIET* personnel on concerns of value education.

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School Education in North-Eastern India: Issues and Prospects

J.P. SINGH*

Abstract

The paper focuses on school education in north-eastern India and its issues and prospects. North-eastern India comprises the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. Only 30.24 per cent villages in India have pre-primary facilities. But in north-eastern region these facilities are better than the national average. While the average increase in primary classes for India was 13 per cent, it was 42 per cent for Arunachal Pradesh and 49 per cent for Manipur. This increase was less than 10 per cent for Mizoram, Nagaland and Sikkim, Assam, Meghalaya and Tripura matched with the all-India average. Of a hundred children enrolled in Class I in India, only 55 per cent reach Class V. The rest 45 per cent drop out. Except Manipur, where the drop out rate is 44 per cent, it is observed to be on the higher side in all other states of the region, which increases to 66 per cent in Meghalaya. The enrolment has increased recently; still a large number of children remain outside the school. Drop out rates for both boys and girls have declined at the primary stage. The gap between drop out rate for boys and for girls has also tapering down. Higher drop out in girls, however, is a serious problem. Schools have to be provided with ancillary facilities in the form of drinking-water, and separate urinals and lavatories for girls. Educational facilities have improved, but still in many secondary and higher secondary schools, science and home science are taught without laboratories. Libraries are in bad shape, and guidance and counselling services are not available in several schools.

Key Words: North-Eastern States, School Facilities, Enrolment, Drop out.

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Education, an essential requirement of a good and enlightened life, is an important component of the human resource development programme. After its inclusion in the Concurrent List of the Constitution of India, we have an all-India policy in the field of education. The Ministry of Human Resource Development in consultation with the states formulated the National Policy on Education (NPE) in 1986. The NPE envisages free and compulsory education for all citizens up to the age of 14 years. The Government has earmarked about six per cent of the Gross Domestic Product (GDP) for the education sector and fifty per cent of the outlay now is to be spent on primary education. School education comprises the following four stages: Primary, Upper Primary, Secondary and Higher Secondary. Pre-Primary Education is not a compulsory in educational ladder, but it forms a part of the Integrated Child Development Scheme (ICDS). It runs in three forms: *Anganwadi/Balwadi*, Independent Pre-Primary School, and Pre-Primary classes attached to a school. Each state of India compiles data on school education for various purposes, but these data often lack in comprehensiveness.

The First All India Educational Survey was conducted by the Government of India in 1957. The Fifth All India Educational Survey was conducted in 1986, with 30 September 1986 as the reference date. The Sixth All India Educational Survey was conducted in 1993 and its date of reference was 30 September 1993. The Seventh All India School Education Survey was conducted with the reference

date of 30 September 2002. The detailed data of the Sixth All India Educational Survey were published during 1997-99. The data contained in the Educational Survey reveal interesting facts about school education.

North-Eastern India

North-Eastern India, comprising the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura contains an area of 262,179 km² (7.98 per cent of India) and shares, according to the 2001 Census, a population of 40.2 millions (3.91 per cent of India). The north-eastern region is smaller than several states like Andhra Pradesh, Madhya Pradesh, Maharashtra and Rajasthan, both in area and population. Occupying a strategic location in the country, the region is rich in agriculture, forest and mineral resources. In the majority of the states, the people are tribal, and are employed primarily as cultivators and agricultural labourers.

In terms of area, Arunachal Pradesh is the biggest state in the region; Assam is the second biggest and Sikkim is the smallest. The first two share about 62 per cent area of the region. In terms of population, Assam is the giant with over 66 per cent of the regional population (Table 1). The growth of population has been higher than the all-India average; only recently Assam and Tripura have recorded a low growth of population. In Arunachal Pradesh, Meghalaya, Mizoram and Nagaland, the tribal population ranges between 64 and 95 per cent of the state population. The region is less urbanised (except Mizoram)

than the national average. The over-all literacy in the region is good, better than the all-India average, only Arunachal Pradesh, Assam and Meghalaya have a literacy rate a little less than the national average. Except Arunachal Pradesh, all the states of the region have a low male-female gap in literacy

School Facilities

As a result of the efforts made by the Central and State governments, 94 per cent of the country's rural habitations have primary schools within one kilometre, and 85 per cent of the rural habitations have upper primary schools within a distance of 3 kilometres. In predominantly tribal and scheduled caste habitations, this percentage is 89 and 91 respectively, in the case of primary schools, and 69 and 83 in the case of upper primary schools. Mizoram ranks first in the case of primary schools, and Arunachal Pradesh, the last. Almost a similar pattern exists in the case of tribal habitations for primary and upper primary schools.

Seventy-eight per cent of the rural habitations of India have secondary schools within a distance of 5 kilometres. Except Assam and Tripura, where this percentage is higher than the national average, all other states of the region have this facility for a lower percentage of rural habitations. In Arunachal Pradesh, not even 45 per cent of the rural habitations have secondary schools within a distance of 5 kilometres. For the tribal habitations, however, this facility is better in the region, except in Arunachal Pradesh, Manipur and Nagaland. For scheduled caste

habitations, this percentage is lower in Arunachal Pradesh and Sikkim than the all-India average. Fifty-seven per cent of the rural habitations in India have higher secondary schools (including intermediate, junior colleges and the pre-university course) within a distance of 8 kilometres. Tripura has this facility for 82 per cent habitations, but Mizoram only for 8 per cent habitations. This facility is better in the tribal habitations of Manipur, Tripura and Assam than the all-India average. The position of scheduled caste habitations is 'good' to 'very good' in Assam and Tripura.

Only 30.24 per cent villages in India have pre-primary facilities. In the north-eastern region these facilities are better than the national average. The percentage of villages having pre-primary facilities in the states of the region is as follows: Arunachal Pradesh (30.80), Assam (9.81), Manipur (84.11), Meghalaya (47.91), Mizoram (55.43), Nagaland (78.75), Sikkim (86.82) and Tripura (83.51).

Enrolment

Between 1986 and 1993 when the Sixth All India Educational Survey was conducted, there has been an overall increase in the number of schools of different categories. The increase in the number of primary schools in the north-eastern region, in general, was more than the national average. Only in Mizoram and Tripura it was less; in Arunachal Pradesh the increase was about three times. In the case of upper primary schools, this increase was lower in Sikkim and Tripura; in Manipur and

Arunachal Pradesh it was more than three times. Almost a similar pattern existed for secondary schools. In Nagaland, the increase in secondary schools was more than three times while in Arunachal Pradesh and Mizoram it was more than two times. The increase in the number of higher secondary schools in Manipur and Meghalaya was five to seven times.

Along with the increase in the number of schools, the enrolment between 1986 and 1993 also increased. While the average increase in primary classes for India was 13 per cent, it was 42 per cent for Arunachal Pradesh and 49 per cent for Manipur. This increase was less than 10 per cent for Mizoram, Nagaland and Sikkim. Assam, Meghalaya and Tripura matched the all-India average.

The average increase in enrolment in upper primary classes for the country during the period was 25 per cent. It was more than two times that in Manipur and Nagaland, and more than three times that in Arunachal Pradesh. Except Meghalaya and Tripura, which recorded a low increase, all other states had more than the national average. So far as the enrolment in secondary and higher secondary classes is concerned, the increases was more than two times in Arunachal Pradesh and Sikkim, and less than the national average in Assam, Meghalaya and Mizoram.

In India, boys outnumber girls in enrolment. The percentage of girls' enrolment to the total in India in primary classes is 43 per cent; all the states of the region have this percentage more than the national average. In upper primary classes, the girls' percentage is

40; all the states of the region have more than this. In secondary classes, the percentage share of girls' enrolment is 37, all the states have more than this. Only in the case of higher secondary classes, the position is a little different. In Arunachal Pradesh the percentage of girls' enrolment is about 30, against the national average of 36. In Mizoram, there was no higher secondary school. All other states had almost the same share of girls' enrolment as that for the national average.

Drop out

Of a hundred children enrolled in Class I, in India only 55 per cent reach Class V. The rest 45 per cent drop out. Except Manipur where the drop out rate is 44 per cent, all other states of the region have it higher; it increases to 66 per cent in Meghalaya. By the time schoolchildren reach Class VIII, 64 per cent drop out. This rate is very high in all the states, ranging from 81 per cent in Meghalaya to 56 per cent in Manipur. The drop out rate increases with the increase in school stage. By the time students reach Class X, most of them drop out. The average drop out rate in India is 75 per cent. It is 64 per cent in Manipur, but in Meghalaya it is 82 per cent. All other states have a very high drop out.

The drop out rate is more among girls than boys. While the average dropout rate of girls in Class V, in India is 41; it is more in all the states except Nagaland and Sikkim. It is more than 50 per cent in Manipur, Meghalaya, Mizoram and Tripura. Meghalaya tops with 64 per cent drop out among girls. By the time girls reach Class VIII, 59 per cent in India drop out. Except Nagaland, where the

drop out is 36 per cent, in all other states it is higher. It is more than 70 per cent in Manipur, Mizoram and Tripura. The high rate of girls' dropout is a big challenge for educationists. When the drop out rates among girls of different social categories are taken into account, they, however, do not show much of a difference among the states of the region. The drop out among the scheduled tribes is more than among the general and scheduled caste population.

Teacher-Pupil Ratio

As the number of schools and students increased between 1986 and 1993, the number of teachers also increased. The number of students per teacher in India is 40 in primary classes, 36 in upper primary classes, 30 in secondary classes and 34 in higher secondary classes. In all the states of the region, the number of students per teacher is less than the national average. In the primary classes of the region, the teacher-pupil ratio ranges between 12 in Nagaland and Sikkim and 35 in Assam. In the upper primary classes, this ranges between 14 in Mizoram and Nagaland and 24 in Arunachal Pradesh, while the national average is 36. The teacher-pupil ratio in the region in secondary classes ranges between 16 in Mizoram and 24 in Arunachal Pradesh. In higher secondary classes, this pattern changes a little. In Nagaland there are 30 students per teacher, and in Sikkim 18. The teacher-pupil ratio is better in rural areas (that is, lesser number of students per teacher) than in urban areas.

On an average, majority of the school teachers in India are of the general

category at all stages of school education. In states populated primarily by the tribal population, the teachers in primary and upper primary classes are mostly tribals. In urban schools, both in primary and upper primary classes, however, the majority of teachers are female. In rural areas the pattern is different. This is different also in secondary and higher secondary classes.

The number of primary schools with three or more teachers in India is 31 per cent. The rest 69 per cent of the primary schools have less than three teachers each. In comparison to this, the position of Manipur, Mizoram, Nagaland, Sikkim and Tripura is very good as the percentage of primary schools with three or more teachers ranges between 60 and 92. Arunachal Pradesh, Meghalaya and Assam have a shortage of teachers in primary classes; the percentage of schools with three or more teachers in these states is 19, 25 and 30, respectively.

Physical Facilities

Eighty-six per cent of school buildings in India are *pucca* and partially *pucca*. In comparison to this, the school buildings in the region are worse. In Manipur and Tripura, less than 40 per cent of the school buildings are *pucca* and semi-*pucca*; in other states, this percentage is more than 50.

While 53 per cent of the school buildings in India have drinking-water facilities, in the region this percentage is very low. Except Sikkim, Arunachal Pradesh and Mizoram, where more than 40 per cent of the schools have drinking-water facilities, in rest of the states this percentage is very low, particularly in

Meghalaya. So far as urinal, and a separate urinal for girls, lavatory and a separate lavatory for girls, are concerned, the position of the region, in general, is bad. The majority of the schools in the region do not have separate urinals and lavatories for girls. This situation is the worst in Assam, Meghalaya and Tripura. In urban areas, the facilities are far better than in the rural areas.

Other physical facilities like almirah/box, playground, blackboard, furniture for students and teachers, also, matter much in development of an appropriate learning situation. So far as the number of usable blackboards in primary schools are concerned, the situation in the region is better than the national average. Only in Arunachal Pradesh, Assam and Tripura, the percentage number of usable blackboards is less than the all-India average. In the upper primary, secondary and higher secondary schools of the region the situation is better. So the problem of blackboards and furniture for teachers and students remains mainly with the primary schools located in rural areas.

Quite a good number of primary schools in rural areas do not have almirahs/boxes to keep teaching-learning materials and other necessary papers related to schools and students. The situation, however, improves in upper primary and secondary schools.

Educational Inputs and Facilities

Proper education demands certain inputs and facilities, particularly at secondary and higher secondary stages. Home science, in the majority of the

schools, is taught without a laboratory. Some schools do not have this facility at all. A laboratory is essential for teaching science. Only in Arunachal Pradesh and Sikkim, over three-fourths of the secondary schools have a science laboratory. In rest of the states, this is available in less than 50 per cent of the schools, the national average is 60 per cent. At this stage of school education, students have a variety of physical and educational problems for the solution of which they need guidance and counselling but the majority of the schools do not have this facility.

The library is an important place of activities in schools but in many schools it does not exist. Wherever it exists, even there it remains non-functional in the absence of a librarian. There is an acute shortage of both trained and untrained librarians in the schools of the region. The high cost of books make the availability of library facilities more difficult for students.

A study of the enrolment of students at higher secondary shows that the majority of the students in rural areas opt for arts and humanities, the percentage of girls opting for this course is very high. Science, commerce and vocational courses have a declining preference, both by boys and girls, both in rural and urban areas. This trend, however, has changed recently with the upsurge in information technology.

Educational Initiative during the Last Decade

During the last decade of the 20th century, a number of school improvement programmes were initiated

by the state and central governments. Some of them were meant to check drop out and some to improve the level of achievements in school. Some elements of the programmes have been the creation of parental awareness and mobilisation of communities, involvement of communities and panchayats, economic incentives, improvement in infrastructural facilities in schools, DPEP initiatives, national programme of nutritional support to primary education in the form of mid-day meals scheme, non-formal education scheme and teacher education scheme

The Operation Blackboard scheme was launched in 1987-88 with the aim to improve the human and physical resources available in the primary schools of the country. The scheme provided at least two rooms, two teachers and essential teaching-learning materials to every existing primary school. During 1993-94, the scheme was extended to cover upper primary schools. It provided three rooms for primary schools, an additional teacher for upper primary schools and a third teacher for primary schools where the enrolment was more than 100. The scheme is implemented through state governments with 100 per cent central assistance for Teaching-Learning Equipment (TLE) and for salary of teachers during the plan period (GOI, 2002, p. 84).

The District Primary Education Programme (DPEP) was launched in 1994 as a major initiative to achieve the objective of Universalisation of Primary Education (UPE). The programme takes a holistic view of primary education development and seeks to operationalise

the strategy of UPE through district-specific planning with the emphasis on decentralised criteria. DPEP, a centrally sponsored scheme, was introduced only in Assam state in the region. Other schemes also made an impact in the improvement of school education in different states. This is well reflected by improvement in the literacy rates of the states of the region.

Issues Summarised

In spite of the fact that enrolment has increased recently, a large number of children remain outside the school. The drop out rates for both boys and girls have declined at the primary stage. The gap between the drop out rates for boys and girls has also narrowed down. Now more children are studying in the system for a longer number of years (Govinda, 2002). More drop outs in girls, however, is a serious problem. Schools have to be provided with ancillary facilities in the form of drinking water, and separate urinals and lavatories for girls. Educational facilities have improved, but still in many secondary and higher secondary schools, science and home science are taught without laboratories. Libraries are in bad condition, and guidance and counselling services are not available in several schools. The statewide position and the requirement in different states are given below.

Arunachal Pradesh: Improvement in school facilities at primary and upper primary stages required. Encouragement for girls' enrolment in primary, upper primary and secondary classes is essential. The drop out rates, particularly among girls, should be

reduced at primary and upper primary levels. Ancillary facilities in the form of urinals and lavatories for boys, and separate urinals and lavatories for girls are needed. Guidance services and libraries demand special attention.

Assam. Girls' enrolment needs special notice. The dropout rate should be controlled. Efforts to check dropout among girls need extra care particularly at the primary stage. Special efforts should be made for lavatories, and separate urinals and lavatories for girls. Laboratories for teaching home science, and science at the secondary stage need urgent consideration. Guidance services and library facilities demand improvement.

Manipur. The drop out rates in primary and upper primary classes need to be controlled. Improvement in ancillary facilities are needed, particularly as regards separate urinals and lavatories for girls.

Meghalaya: Special care is needed to control drop out rates in primary, upper primary and secondary classes. The drop out rates are high, both among tribal boys and girls; efforts are needed to check them. An extra effort should be made for construction of urinals and lavatories both for boys and girls. Laboratories for science and home science are essentially needed. Libraries require improvement.

Mizoram. Mizoram has better facilities in school education. The drop out rate demands attention. Ancillary facilities are the best in the region. Laboratories for teaching science and home science, however, need improvement. Libraries demand special attention.

Nagaland: The drop out rates are comparatively lower even among girls. Ancillary facilities demand attention, particularly lavatories. Laboratories for science and home science are needed.

Sikkim: School facilities are good. The drop out rate is high, particularly at the upper primary stage. This needs special attention. Ancillary facilities are better, but improvement as regards separate urinals and lavatories for girls requires special notice.

Tripura: The drop out rate is high, particularly at the upper primary and secondary stages. Girls' drop out rate is high, both at primary and upper primary stages. Drop out rates are high among tribals. Ancillary facilities are poor. The state has to make extra provision for separate urinals and lavatories for girls. Science and home science laboratories have to be provided in several schools. Libraries and guidance services require proper care.

Prospects

Education is a prerequisite for progress and development. The main thrust of educational activities should be promotion of quantity, quality and excellence, all at a time. The Sarva Shiksha Abhiyan (SSA) launched by the Government of India to universalise elementary education through community ownership of the school system may remove many of the problems associated with primary and upper primary schools (NCERT, 2001, p. 11). The goals of the SSA are, (i) to have all children in school by 2003, (ii) to ensure that all children complete 5 years of primary education by 2007, and 8 years of elementary schooling by

2010; (iii) to make education relevant; (iv) to remove social and gender gaps; and (v) to achieve universal retention by 2010. The basic features of the SSA are: (i) institutional reform, (ii) sustainable financing for the programme, (iii) providing community ownership of the programme, (iv) decentralising the process of education up to sub-district and habitation levels. The SSA will cover the following types of districts. Non-DPEP states, low female-literacy districts, and the 'left-out' districts of DPEP states. This will affect all the states of the north-eastern region. The states must ensure full utilisation of resources under the Abhiyan.

Vocational education, which is not in good shape in the region, must find a suitable place in the school system. This is important in order to provide learners with some kind of livelihood. Vocations

should be related to available natural and human resources. This may generate employment opportunities for the people and reduce various kinds of tensions and anti-social activities which are detracting from the developmental efforts of the governments within the region.

The large-scale erosion of human values in recent years has given birth to various kinds of social evils. For inculcation of human values we have to make a concerted effort. This effort must be given a weightage in education, and in the social, economic, and political life of a person. The system of evaluation of educational achievement and human personality will have to be changed to include the component of values.

Economic development is generally defined as the maximisation of national

TABLE 1
North-Eastern India: Basic Geographical Data

State	Area		Population (in thousands)				No. of Districts	
	Km ²	%	1991	%	2001	%	1991	2001
Arunachal Pradesh	83,743	31.94	865	2.71	1,091	2.71	11	13
Assam	78,434	29.92	22,414	70.14	26,638	66.26	23	23
Manipur	22,327	8.52	1,837	5.75	2,389	5.94	8	9
Meghalaya	22,429	8.44	1,775	5.55	3,474	8.64	5	7
Mizoram	21,081	8.04	690	2.16	891	2.22	3	8
Nagaland	16,579	6.32	1,210	3.79	1,989	4.95	7	8
Sikkim	7,096	2.71	406	1.27	540	1.34	4	4
Tripura	10,486	4.00	2,757	8.63	3,191	7.94	3	4
North-Eastern India	262,179	100.00	31,954	100.00	40,203	100.00	64	76

Source: Census of India 2001, Provisional Population Total, Paper I of 2001, Supplement, District Totals.

income and its rate of growth, but this concept will have to be changed. As all economic development affects society, it must be related to it, and hence we should emphasise socio-economic

development, rather than *economic development*. Socio-economic development demands a well-informed society which knows the difference between the good and bad aspects of a development

Decentralisation of Elementary Education in the State of Gujarat

S. KUMAR*

Abstract

The study examines the process of decentralisation of elementary education in the State of Gujarat. For the implementation of the Vidya Sahayak Scheme during the years 1998-99 and 1999-2000, about 18,000 and 20,000 Vidya Sahayaks, respectively, were recruited. By 2000, the State Government had removed the shortage of teachers in the primary schools in Gujarat. This clearly shows the changing perspectives of state policies of decentralisation of elementary education. The paper argues that Village Education Committees (VEC) and Ward Education Committees (WEC) need to be formed and start functioning in the non-DPEP districts as well. The administrative structure ensures participation of people at the grass-root level in elementary education, which is likely to increase enrolment, retention and quality education and maintenance of primary schools. The Gujarat Government is investing 16% of its total budget in education of which 11 per cent is invested in the primary education. However, many more steps need to be taken for ensuring effective functioning of various institutions in the state.

Key Words: Decentralisation of Elementary Education, Educational Administration

The development of a nation depends to a large extent on its human and physical resources. Even proper utilisation of physical resources depends on the human resource of the nation. It is education, as a tool, which develops human resource. Professor Amartya

Sen, the Nobel Prize Laureate, considering the importance of education states: "An illiterate person is much less equipped to defend herself in court, to obtain a bank loan, to enforce her inheritance right, to take advantage of new technology, to compete for securing

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employment, to get on to the right bus, to take part in political activity, to participate successfully in the modern economy and society" It is for such reasons that the provision regarding free and compulsory education to all children until they complete the age of 14 years is made in the Directive Principles of the Constitution. Determined efforts have been made since 1950 towards the achievement of this goal, and ever since there has been a significant increase in the enrolment and education facilities. However, Universalisation of Elementary Education (UEE) in its totality is still an elusive goal. According to Ambani and Birla (2000), *"one of the nations' most stubborn development challenges is the fact that about 330 lakh children of primary school age are still not enrolled in schools"*. Therefore, a great effort is required to achieve the goal.

The National Policy on Education (NPE), 1986 and its Programme of Action (PoA), 1992 gave utmost priority to UEE and introduced many innovations. First, the emphasis was shifted from enrolment *per se* to enrolment as well as retention. Secondly, the NPE, 1986 sought to adopt an array of meticulously formulated strategies based on micro-planning, and applied it at the grass-root level all over the country, to ensure children's retention at school. For this purpose, the PoA, 1986 and 1992 envisaged replacing enrolment drives by participative planning in which the teachers and the villagers would formulate a family-wise and child-wise design of action to ensure that every child regularly attended school or non-formal education centre, and completed

at least five years of schooling or its non-formal equivalent. Thirdly, the NPE, 1986 also recognised, unattractive school environment, unsatisfactory condition of buildings and insufficiency of the instruction function as demotivating factors for children and their parents. The policy, therefore, called for a drive for a substantial improvement of primary schools and provision of support services.

It may be stated here that in the Eighth Plan the strategy for UEE envisaged adoption of disintegrated target-setting and decentralised planning. Such efforts in India had been made earlier also; the Mehta Balwant Rai Committee (1957) recommended a three-tier administrative structure: the Village Panchayat, constituted on a purely elective basis, Samiti, constituted by indirect election at the block level, and the Zila Parishad, constituted of Presidents of Panchayat Samitis, local Member of Legislation Assembly (MLA), Member of Parliament (MP) and district-level officials. In this administrative structure, the Block emerged out as an important unit and the Panchayat Samiti occupied the key role. Through legislation the three-tier Panchayat Raj System was created and Primary Education was entrusted to it. However, the transfer of Primary Education to Panchayat Samitis created a dual system of management as it vested administrative control in the Panchayat Samiti and technical control in the State Department of Education. Posts were sanctioned by the Department of Education and funds were also controlled by the department. Thus, the

decentralised management of primary education could not function as effectively as it was expected

In order to overcome the above defect in the decentralised management of primary education, 73rd and 74th Constitutional Amendments were enacted in 1992

"By the Constitution (73rd Amendment) Act, 1992, the Panchayati Raj institutions have been given constitutional recognition. It has inserted a new part consisting of 16 Articles and a schedule (called Eleventh Schedule). It makes provisions in respect of the establishment, composition, power and obligations of Gram Panchayats. Article 243-A provides that, 'a Gram Sabha may exercise such powers and perform such functions at the village level as the legislature of a State may, by law, provide'. By the Constitution (74th Amendment) Act, 1992 a new part consisting of 18 Articles and a Schedule (called 12th Schedule) has been inserted. It makes provision in respect of the establishment, composition, power and obligations of Municipalities "

This was done to implement the Eighth Plan strategy for UEE, which envisaged adoption of decentralised planning. Micro-planning was considered to be the best mode to decentralise elementary education. As stated in the PoA, 1992, Micro-planning is a process of designing "a family-wise and child-wise action plan" by which every child regularly attends school or NFE centre continues his/her education at a place suitable to him/her, and completes at least 8 years of schooling or its equivalent at the non-formal centres. A revenue village was considered

an ideal unit for specific planning, however, Micro-planning for UEE was to be carried out at the Block, Taluka, District levels also. In the PoA, 1992, it is operationalised as under.

1. The Village Education Committee and similar participatory structures at Block, Taluka and District levels would play an important role in operationalising Micro-planning.
2. Mobilising community participation through environment-building activities such as *jathas*, street plays, folk songs, etc
3. Ascertaining educational requirements of the areas through a family-wise survey to be conducted with the help of the community.
4. Bringing to school all children who can be enrolled, and providing NFE centres or other innovative supportive channels for those who cannot go to school.
5. Ensuring that all children, especially girls and SC/ST children, regularly attend and actually participate in elementary education
6. Reorienting and strengthening local level administrative and support systems.
7. Decentralising educational administration
8. Integrating all the schemes in the area, which would contribute to the improvement of school system.

However, the policies framed at the National Level can be implemented successfully only if the states also change their policy perspectives, create needed administrative structures, and decide functions and powers of each functionary. Let us view some of these aspects with respect to decentralisation of elementary education in the state of Gujarat.

Changing Perspectives of State Policies of Decentralisation of Elementary Education

In the case of Gujarat one can see that the policy perspective has changed. The state has become comparatively more serious by participating in the innovative programmes. For example, Gujarat during the nineteen-eighties did not participate in the project aiming at the universalisation of elementary education, i.e., "Comprehensive Access to Primary Education". But the DPEP project has been one of the projects implemented whole-heartedly in the state of Gujarat. The project was implemented in three districts of Gujarat: Banaskantha, Dang and Panchmahal. In order to decentralise elementary education, certain structures have been created at district, block, taluka and village levels in the DPEP districts where the project was implemented. Similar structures have been created by the state in the non-DPEP districts, too. Change in Perspectives of State Policies is also visible from another action of the state: during the period 1990 to 1996, there was ban on recruitment of teachers due to financial constraints prevailing in the state, which resulted in a shortage of

around 20,000 teachers. This disturbed the norms of the teacher-pupil ratio, with the number of pupils rising consistently. To improve this situation, the state government introduced the scheme of "Balguru". During the year 1997-98, all over the state, out of 15,000 vacancies only 3,700 Balgurus could be recruited due to a stay order of courts. Due to these shortcomings, an acute shortage of teachers in primary education developed. To overcome this situation and other limitations, the government introduced a new scheme, i.e. "Vidya Sahayak" (vide G.R. dated 11-6-98). Under this scheme, the state government decided to appoint Vidya Sahayaks purely on merit at a fixed honorarium of Rs. 2,500 per month, initially for two years, with the provision to regularise these positions in the regular pay-scales of teachers after two years, taking into consideration their seniority and work experience. With the implementation of this scheme during the years 1998-99 and 1999-2000, about 18,999 and 20,000 Vidya Sahayaks, respectively, were recruited. It may be noted that by the year 2000 the State Government removed the shortage of teachers in the primary schools of Gujarat. This clearly shows the changing perspectives of state policies of decentralisation of elementary education.

Nature of Legislature Statutes/ Ordinances/Rules and Regulations Enacted to Facilitate the Decentralisation

The nature of a government resolution to a large extent influences the implementation of the decided policies

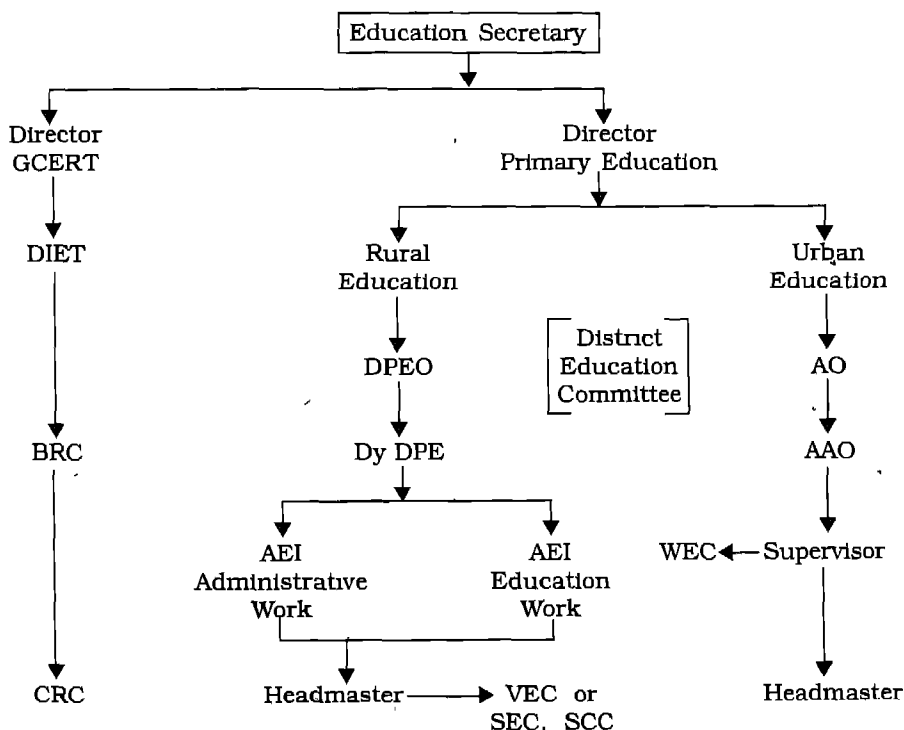
When we say nature of ordinances/rules or resolutions, etc , we include two main aspects:

1. The clarity and specificity of the rules indicating clearly actions to be taken.
2. The tone of the resolutions enacted indicating the determination of the

government in implementing the policies

If one examines the nature of ordinances brought out by the Gujarat Government to form the Village Education Committees and Ward Education Committees in the three DPEP districts, that is, Ordinance No. PRE-1295-1419-(99)C, dated 20-9-99,

CHART 1
Administrative Structure of Elementary Education in Gujarat



- AO = Administrative Officer
 AAO = Assistant Administrative Officer
 DPEO = District Primary Education Officer
 AEI = Assistant Education Inspector
 WEC = Ward Education Committee
 VEC = Village Education Committee
 SEC = School Education Committee
 SCC = School Construction Committee

one would find that the ordinances clearly state the procedure of forming Village Education Committees and Ward Education Committees. Specific activities to be carried out by the committees are also stated clearly in the Ordinance No PRE-1295-2497-C, dated 19-10-96; the same list of activities was appended with Ordinance No. PRE-1295-1419- (99)C, dated 20-9-99, where the procedure of forming the committees was stated. The later ordinance also stated the procedure of paying TA and DA to the committee members for the meeting and its source.

However, Ordinance No. PRE-1295-1419-(99)-C, did not state the time-limit by which the Village Education Committees and Ward Education Committees should be formed and start functioning in the non-DPEP districts.

Administrative Structure Created

The decentralisation of elementary education can be considered successful when people at grass-root level start taking part in the educational activities. The villagers' concern and involvement will increase enrolment and retention and enhance the quality of education. But this is possible when well-coordinated administrative structures are created. The administrative structure of elementary education that emerged in Gujarat is threefold. This is represented in the chart given in the previous page.

The administrative structure ensures participation of people at the grass-root level in elementary education and is likely to increase enrolment, retention, and quality of education and maintenance of primary schools.

Authority/Autonomy Vested at Different Levels of Administration and Nature of Functions Allotted

In order to decentralise elementary education, the BRCs, CRCs, VECs, WECs, and SECs have been created in the state of Gujarat. DIETs had already been created a little earlier. It is praiseworthy that the Gujarat Council of Educational Research and Training (GCERT) and the District Institutes of Education and Training (DIETs) have been given 'autonomy'. This has made their decision-making faster and as per their requirement. The DIETs have been able to provide academic guidance and training through liaison officers to the BRC and CRC staff.

The Block Resource Centre (BRC) at taluka level is a coordinating link between the DIET and the CRCs. The Cluster Resource Group is prepared at BRCs with the help of DIETs. The BRC provides guidance related to teaching, evaluation and daily administration, etc. to the CRCs, and also helps them in planning the activities for the weekly meetings.

The Cluster Resource Centres (CRCs) have been established with each Centre covering all (about 8–10) schools within an 8 km radius. Weekly meetings are conducted by the CRCs on Fridays. The teachers teaching in Classes I and II, Classes III and IV and Classes V, VI and VII meet on the first, second and third Fridays of the month, respectively. In the CRC meetings, the BRC coordinator and the Liaison Officer also participate.

On the fourth Friday of the month, a meeting is conducted at the BRC in which CRC coordinators report the work

done in the three weekly meetings and plan the activities to be done in the weekly meeting during the next month.

Nature of Functions Allotted to the VECs, WECs and SECs

It may be pointed out here, that the functions of the VECs, WECs and SECs are the same. The only difference is that VECs and SECs are set up in the rural areas where education remains the responsibility of the District Panchayats and the Gram Panchayats, while WECs are created where education is the responsibility of the Corporations and Nagar Palikas. Their main functions are:

1. to ensure that all children in the age-group 6-14 years, get enrolled, so that no one is deprived of education;
2. to ensure that all the enrolled children get quality education and are retained in the school;
3. to ensure that SC and ST children, and especially girls in the villages, slum kids and children staying on footpaths in urban areas are enrolled and remain in the school and get quality education;
4. to improve facilities in the school, e.g. compound wall, new classroom, drinking water, sanitary facilities, benches, table, sports materials, stationery, repairs and maintenance of the building, etc., with the help of the local community;
5. to improve educational facilities in the school, such as educational aids like charts,

maps, musical instruments, and articles needed for experiments, etc. with the help of the local community;

6. to ensure community participation in the school by forming PTA, MTA, etc.;
7. to check regularity of the teachers;
8. to help alternative schooling.

It may be noted that the power of repairing the school building and constructing new rooms is not with the VECs now. For this purpose another committee, called the School Construction Committee, is formed. It comprises:

1. School Principal
2. Sarpanch
3. A lady teacher
4. A local mason, and
5. A member of the Mother-Teacher Association

Availability and Use of Financial Resources

For the administrative structures which have been created particularly for decentralisation of elementary education, namely, BRCs, CRCs, and VECs in the DPEP districts, i.e. Banaskantha, Dang and Panchmahal, the finance is available from the DPEP project funds and the same is being utilised for carrying out the needed activities.

However, the interest of the state government can be judged from the financial arrangements it makes from its own budget. If one examines this, one finds that, the CRCs in Gujarat state have been allotted Rs. 2,25,000 for their

research activities as per the Education Department's circular No. APB - 2001 - 1286, dated, 27-7-2001, communicated to the DIETs *vide* letter no. GCERT/Budget/Grant/2000-02/11167-11209, dated, 9-8-2001. Accordingly, work is being done and finance is being used Rs 500 per Action Research and Rs 2,000 per Case Study. It may be stated that the BRCs have not been allotted any funds

Regarding the financial arrangements made by the Gujarat government for VECs, SECs and WECs, one finds that provision has been made for TA/DA for those members of these committees who are not government employees, *vide* government resolution No. PRE-1295-1419 -(99) C. Sachivalaya Gandhinagar, dated, 20-9-99. The Government of Gujarat provides no other grants to VECs. It is noteworthy that the District Primary Education Committee, District Panchayat, Vadodara, *vide* its circular, dated 20-9-01, has created a School Construction Committee. The SCC will also be provided some funds for repair and construction work.

The Extent of Decentralisation and Its Impact

With respect to the decentralisation of elementary education in Gujarat, one finds that administrative structures have been created in all the 19 districts where one can say that the extent of achievement with respect to the creation of administrative structures is 100 per cent.

Regarding the functioning, one finds that BRCs and CRCs are working well and the extent of achievement is again 100 per cent. This has brought about a

qualitative improvement in elementary education. However, the VECs are functioning in three DPEP districts only out of 19 districts in the state, in other districts they are still searching pathways; therefore, the extent of achievement with respect to their functioning is about 20 per cent. These committees will start functioning shortly. This means that access and equity have increased in three districts, and in other districts, also, they are likely to increase. The Gujarat government has issued orders for the formation of WECs and SECs but they are yet to be formed.

The impact of decentralisation of elementary education is also visible on enrolment of students. The number of newly admitted children is shown in the table below for four years.

TABLE 1
Number of Newly Admitted Children

Sr. No.	Year	No. of Newly Admitted Children
1.	1997-98	14,16,665
2.	1998-99	14,50,253
3.	1999-00	15,90,836
4.	2000-01	16,22,000

The state government has taken the following steps with a view to reducing the drop out rate at village level.

1. Gujarat has achieved the national norm of providing a primary school within 1 km of every village
2. Free textbooks and school uniforms are provided to the children of SC, ST, Baxipanch, and other backward classes.
3. The Midday Meal Scheme has

been implemented in the schools.

4. Scholarships are given by the Social Justice and Empowerment Department.
5. Under the Prime Minister's Relief Scheme, in the tribal areas, two girls studying in the primary school from one family will be provided 20 kg food-grains every three months by the state government.
- 6 The introduction of Balmitr Varg for joyful learning has been successful
- 7 Pravesh Utsav is celebrated in every village during June to August. Every child who has completed five years of age is brought to school and given a slate, pen, school bag and uniform. VEC invites leaders, officials and parents and drama, *nritya*, etc., are performed by school children. Thus, public involvement is created in school activities.

It is also worth mentioning that the Gujarat government is investing 16 per cent of its total budget for education, of which 11 per cent is invested in the primary education.

Nature of Problems Encountered while Implementing Policy of Decentralisation

With respect to the problems encountered in implementing the policy of decentralisation, one finds the policy very practical. However, there are a few problems, which are encountered in its implementation; these are as follows:

1. When teachers of the school go to attend the CRC meetings, it affects the instructional activities. The problem is more serious in those schools which have single teacher or two teachers. Even schools, which have a full strength of teachers, if teachers of Standards I and II go to attend the meeting, the students of these classes sit in the classes of Standards III and IV, are affected. In taluka schools where each class has 3-4 divisions, the disturbance is more.
2. Another problem is related to funds; for example, BRC is not provided with grant. Therefore, BRC's functioning is not as effective in non-DPEP districts as it is in the DPEP districts.
- 3 At the district level, lack of coordination between DIET and DPEO reduces the efficiency of the functioning of BRCs and CRCs.
- 4 Another problem is the lack of motivation in the local community where education is just entering the lives of the current generation, there is even lack of understanding about what can be done to improve the quality of education. In certain villages people do not come forward even to be the members of VEC.

Remedial Measures for the Future

Considering the difficulties, which are faced in the implementation of the decentralisation policy, the following remedial measures are suggested:

1. In order to avoid disturbance in the instructional process, the CRC meeting may be conducted on Saturdays, as it is a half day. In schools, Saturday may be kept as a sports or cultural activities day. These should be well organised for the children. The sports activities should also include games usually played by children in the village. The cultural activities such as singing, dancing, etc., should include *bhajans*, folk songs, folk dances, etc
2. VEC, WEC or SEC members may be requested to observe the activities. Any one member could observe the children's activities. Members may be asked to give names of children whose performance is good in different activities. This should be considered for selecting the names of students for competitive events to be held at block and district levels.
3. Financial provisions must be made for the BRC to conduct its activities. Financial provisions must also be there at least for instructional and sports materials, and repairs, etc. for WECs, VECs and SECs.
4. Capacity-building programmes are needed for VEC, WEC and SEC members also. In selected areas, even parents need capacity-building programmes.
5. Efforts must be made to increase coordination between DIET and DPEO.
6. Government circulars may include the time-limit for the creation of administrative structures and the date of the first meeting of the newly formed body.

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Maktab Education in the Mosques

KULDIP KAUR*

Abstract

The traditional religious education of the Maktab indicates the community's attachment to religion, culture and tradition. It shows that how a community continues to cling to its traditional education system even with the fast changing modern education system in India. Therefore, the present study tried to find out the current status of Maktab education and discusses what keeps the traditional education system alive in context of the modern system of education. Sixty Maktabs and nearly 100 maulvis/maulanas were interviewed and selected randomly from rural areas of Saharanpur district of Uttar Pradesh. The study revealed that the students who go to Maktabs intend to get Quranic education. Very few students join the Maktabs only for learning languages such as Urdu, Persian and Arabic. It was also found that socio-economic, religious and cultural, psychological and attitudinal factors compel the Muslims to send their children to Maktabs. Some Maktabs do not provide secular education, therefore these students, after passing out from the Maktabs are reluctant to join secular schools to get higher education. It was also found that there is a great need for introducing the secular subjects in Maktab education so that the students may be able to get higher education in secular institutions with professional proficiency.

Key Words: Maktab Education, Quranic Education

A Maktab is a place, where reading and writing are taught. It may be called a primary school. The classes of a Maktab are commonly held in a mosque and taught by its Imam. The word Maktab, derived from the Arabic *katabat*, was a place meant for elementary religious

teaching. The aim of Islamic primary education is to impart knowledge of the alphabet and teach prayers. This meant that the curriculum of the Maktab is based on Quranic studies; hence Maktab education plays a significant role in the attitude and behavioural development of

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students at an early age. The kind of education imparted to learners within their religious bounds not only gives shape to their political, social, economic and cultural development, but also develops their character and outlook of life.

The ever-increasing interest of Muslims in receiving religious education from denominational institutions has led to their occupying an important place in the educational system of the Muslims. The traditional religious education of the Maktab indicates the community's attachment to religion, culture and tradition. It is a classic example of how a community continues to cling its traditional education system even with a fast changing modern education system in India. The present study tried to find out the current status of Maktab education, and also what keeps the traditional education system alive in the context of the modern system of education.

Sample of the Study

It is understood that Maktabas are mostly attached to mosques and controlled by the mosques' in-charges, who are known as mullas (the Persian form of the Arabic *maulvis*—learned men, often used for the rural priestly class, who also work as Maktab teachers). Sixty Maktabas were selected randomly from the rural areas of Saharanpur district in Uttar Pradesh. The selected Maktabas are all running in the premises of mosques. These Maktabas are provided elementary religious education along with some other formal subjects. Basically, these are places of worship as well as of imparting religious education.

Coverage of the Study

The present study attempts to understand the status and relevance of Maktab education, and discusses their organisational and educational status and contributions to society. For this, information regarding sixty Maktabas was collected and nearly 100 *Maulvis*/*Maulanas* were interviewed. However, the primary data was collected through interview schedules.

Organisational Status

As already mentioned, the selected Maktabas are all running in the premises of the mosques in different villages. More than 60 per cent of the selected Maktabas have been run since before Independence, while the remaining 40 per cent have been run for the last 30 to 40 years. In pre-colonial times, these institutions were fulfilling all the public and personal requirements of Muslims, ranging from religious rituals to the functioning of the state governance. With the establishment of the British power in India, the Maktab education had received a serious setback. It was assumed that most of the Maktabas disappeared because of the new education policy of the British. But over a period of time, some new ones were established to carry on religious education of Muslims. Even in independent India, many more Maktabas emerged to impart elementary religious education to Muslim children. There are various types of recognition or affiliation to the Maktabas, such as: (i) private, (ii) recognised by or affiliated to board or council, and (iii) recognised by local committee/village people/community. Of the selected Maktabas, 92 per cent are

managed by local committees/village people, 2 per cent by the mosques' in-charge, and remaining 6 per cent by council or board. The collected data revealed that more than 80 per cent Maktab are not registered with any board or committee. Generally, the village people make a committee and take charge of the management of the Maktab, with nominal finances and infrastructural facilities. Such kinds of Maktab are generally financed either by private collection or donations. There is no separate place of learning. The classes are held in the corridors of the mosques. The chair-table concept has not been developed. Pupils sit on *tat* or *durry*. The infrastructure as well as sanitation (lavatory) facilities are practically non-existent. Regarding management activities, some Maktab are found to be partly residential and provide free boarding and lodging to orphan children. The Maktab provide free education but sometimes they charge a nominal fee from financially well-off students. The provision of holidays also varies from Maktab to Maktab. Some Maktab provide holidays for one month, and others for 15 days, in a year except the weekly day off. Holidays are also given on the days related to Muslim celebrations, Independence Day and Republic Day. Besides, the month of Ramzan is generally declared a vacation period.

Educational Status and Pupil Strength

The educational status of the Maktab varies in respect to students and teachers. The enrolment of students and

their socio-economic status also vary. Since Islam does not give any importance to caste system, admission is open to all. But the Maktab being a religion-bound educational institution, automatically admits children of the Muslim community. The data collected from selected Maktab revealed that they provide free education. Therefore, the children of the poorer classes and lower castes take admission in the Maktab. These students belong to castes like *Teli*, *Julaha*, *Nai*, *Qureshi*, *Ansari*, *Dhobi*, *Dhuman*, *Darzi*, *Lohar*, *Faqir*. Students from the upper castes are rarely found in such schools. Girls are also allowed admission but can study with the boys only up to the tender age. As soon as they reach puberty, they have to leave the boys' Maktab because of strict enforcement of purdah and the early-marriage system; hardly any Maktab exists only for girls. The teaching hours of each Maktab are different, depending upon the teacher because mostly these are single-teacher schools. Generally, classes start after the mosque's morning prayer (*namaz*). Some Maktab start classes at 7 a.m. and close before the evening prayer, with a 3 to 4 hours noon break. However, the timings and duration of the different Maktab are not similar. The duration or period of courses of different Maktab also varies from 1 to 4 or 5 years. In Quranic learning, the duration depends on the student's competency. If a student only wants to learn the Quran and learns it in a year or so, he/she may leave. Overall, the promotional aspects and longevity of the course depend on the teacher. Regarding curriculum, the Maktab do not provide

secular education but some subjects like Hindi, arithmetic, and civics are taught along with Quranic learning. Knowledge of Urdu and Arabic languages is necessary for the core subjects of the Maktab

Relevance and Contribution of the Maktab

In today's modern education system, the Maktab education has no place but this education has relevance in the Muslim community, as it contributes in multiplying the literacy rate in the society. The data collected revealed that Maktab are considered as one of the literacy centres. It was observed that the students who receive a Maktab education are reluctant to go in for modern education in formal schools as they become over age for these. Therefore, they are compelled to either take up some income-generating activities or the performing of religious ceremonies as a profession. Thus only a small number of Maktab students go for higher education. Some students get admission in higher madrasas (traditional Muslim institutions of higher education) for getting education in *Unani* medicine and becoming Hakims. It is observed that the students who go to the Maktab intend to get Quranic education. Hardly rare numbers of students are interested to join Maktab only for learning languages such as Urdu, Persian or Arabic. The data also revealed that socio-economic, religious and cultural, psychological and attitudinal factors compel the Muslims to send their children to Maktab. But the authorities of these Maktab

elucidated the following factors for joining the Maktab: (i) free education, (ii) wish to memorise *Quran*; (iii) faith in Islam; (iv) to become preacher of Islam; (v) easy to get livelihood; (vi) consider higher status in Muslim community, (vii) able to sermonise all religious rituals; (viii) producing Maulvis, Maulanas and *Hafiz*; (ix) proficiency in Urdu and Arabic makes language experts; and (x) produce students for getting *Unani* education that has higher demand in Muslim countries. Thus, the Maktab produce religious bounded students. These Maktab do not provide secular education. Therefore, these students after passing from Maktab are reluctant to join other schools for higher learning. This has resulted in the backwardness among the Muslims in modern system of education. Maktab education does not provide better opportunities in getting high salaried jobs. This has also resulted in the economic backwardness of Muslims as compared to other communities. This analysis revealed that there is much need of introducing different subjects in Maktab education so that the students may be able to get education in other higher institutions with professional proficiency.

Implications

The study brings out that the contribution of the Maktab in Quranic education is indeed worthy of special consideration but in the context of present-day needs, it must be fundamentally changed. It is observed that the Muslims are far behind the other communities in coping with the fast

changing modern environment, because of their traditional education system. Moreover, the political, social, economic and environmental situation has undergone a change but the traditional education imparted in Maktabas has not caught up with the requirements of the time. According to the changed education pattern of the world, the religious education imparted in the Maktabas is not enough for the progress of the Muslim community. The data revealed a large number of students, who could otherwise have obtained modern education, are seeking admission in bigger madrasas for

religious and economic reasons. Even after getting higher traditional education, most of the students are unfit to earn their living. Therefore, there is need to integrate Maktab education with the modern system of education to enable the students to face the challenges of today. Attitude is a major agent of change; therefore a change in the attitude of the individual and of the community is necessary for the reconstruction of Maktab education. This is only possible if the Muslim religious teachers and preachers counsel the community to accept this reality.

Assessment of Teacher Effectiveness in Relation to Student Learning Outcomes

S. PREM KUMAR*

Abstract

The success of any progressive reform in education should begin from the qualitative improvement of the teacher and his/her professional development. The development of professional competence primarily depends upon a proper assessment of the teacher's competence. At present, most of the teacher assessment, both pre-service and in-service is based on classroom observation. Such assessment may be unreliable, and not in relation to the result of the training. For teacher assessment three prominent procedures, namely, rating (student rating, supervisor rating and self-rating), systematic observation of the class and student learning outcomes could be used. This study tries to find out the extent of acceptability of teacher assessment based on student learning outcomes and the order of preference for the type of student learning outcomes for the purpose.

Key Words: Assessing Teacher Effectiveness, Student Learning Outcomes

The strength of an educational system largely depends on the quality of instruction that sustains it. Although there are numerous factors which influence the quality of instruction, competence and character of the teachers are undoubtedly the most significant. The difference between good and bad schools could be wholly explained in terms of quality of teachers

(Goodings, et al., 1982). So, the success of any progressive reform in education should begin from the qualitative improvement of teachers and their professional development.

The qualitative improvement of teachers could not be successful unless they are assessed properly and upgraded. The *National Curriculum Framework for School Education*

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(NCERT, 2000) suggests that institutions responsible for imparting pre-service teacher education in the country would play a vital role in bringing about reforms in evaluation practices (pp. 123-124). For this, they have to make evaluation a core component in their curriculum and review the existing ones thoroughly. But this often poses many problems since a correct and reliable assessment procedure is not available. At present, most of the teacher assessment, mainly during the training periods, is based on classroom observation. Such classroom observation may be either casual or unsystematic. The objectivity and reliability of the result obtained from such assessment are doubtful. This is why many educators have opined that teacher assessment should not be always based on the classroom behaviour of the teacher. No matter how attractive is the teacher-pupil interaction, the teaching will not be effective unless the result of teaching is reflected in the pupil's learning.

In spite of the universal recognition of the importance of measuring effectiveness of teaching, a uniform, objective and reliable method is not available. In order to assess teaching performance, three prominent procedures have been suggested by Rao and Reddy (1982). These are:

1. Rating (student rating, supervisor rating and self-rating)
2. Systematic observation
3. Observation based on students' learning outcomes

Dunkin (1987) also suggested the same procedure for assessing teacher

effectiveness. The first two methods, mentioned above, are used extensively and their disadvantages are well known. So a study which aims to identifying student learning outcomes with a view to assess the effectiveness of teaching is greatly important. If this method of assessment is found more acceptable among teachers, then its effectiveness could be established through extensive experimental research. This may help to build up a reliable and empirical model of teacher evaluation. Thus, the present study is a step in identifying a clear-cut and reasonable method of evaluation of teachers which may be a valuable contribution to the process of improvement of teacher education and the teacher's professional development.

Evaluation of Teaching Based upon Student Learning Outcomes

Assessing the teacher's competence in terms of student learning outcomes is relatively a recent step. It has many advantages over other methods of teacher assessment. Einstein (2000) points out four aspects in this context. These are:

1. It promotes new perspectives on assessing teaching.
2. It promotes high expectation and more vigorous standards in teaching.
3. It helps to promote teacher development.
4. It empowers administrators to take concrete action for increasing teaching skills.

While we think about assessment of teachers based upon learning outcomes, it is necessary to identify the type of

learning outcomes. As usual they are Cognitive, Affective and Psychometric. The cognitive attainment of students is directly related to the teacher's skill and proficiency in teaching. So one indicator of teacher effectiveness is to include cognitive student learning outcomes. Again, the teacher can influence a wide array of student attitudes, beliefs, feeling, dispositions and study skills. The teacher's way of teaching may often change pupils' attitudes, interests and aspirations in learning a subject and that in turn may be reinforced by parents, peers or the pupils themselves. In this context an attempt was made to study the feasibility of using various student learning outcomes for assessing teacher effectiveness.

Objectives of the Study

The objectives of the study were:

- 1 To study the feasibility of using the student learning outcomes for assessing teacher effectiveness
- 2 To identify certain components of student learning outcomes which indicate teacher effectiveness

Methodology

Sample

The sample comprised 395 teachers teaching in various high schools and higher secondary schools in Kerala.

Tools

A questionnaire was used in the study. The purpose of the questionnaire was to collect the opinion of teachers regarding the use of various methods to assess teacher effectiveness and to know

the order of preference in cognitive and non-cognitive student learning outcomes which indicated effective teaching. The statements relating to the components of student learning outcomes show the teacher competency which helped in assessing teacher effectiveness. The following components were included:

- A. High student achievement in a standardised test.
- B. Favourable student opinion about the teacher.
- C. Favourable parent's opinion about the teacher.
- D. Confident student responses to oral questions of the teacher
- E. Favourable peer-group opinion about the teacher.
- F. Exhibiting good learning skills by the students
- G. Positive attitude towards the teacher.
- H. Positive attitude of students towards the subject which the teacher handles.
- I. High student interest in the subject which the teacher handles.

Collection of Data

The First few questions were intended to collect personal details. Then questions related to the teachers' opinion about using student learning outcomes for assessing teaching performance were included. This was followed by 9 items [(A) to (I)] aimed to collect their preferences (ranking from 1 to 9) using various cognitive and non-cognitive student learning outcomes for assessing teacher effectiveness

Findings

1. Preference given by teachers regarding the method of teacher assessment

Here the subjects were asked to select the most suitable method for assessing teachers. Three options were given. The results are given in Table 1.

TABLE 1
Preference of Teachers (N = 395)
Regarding the Use of Various
Methods of Teacher Assessment

Sr. No	Types of Assessment	Total Number	Per cent (%)
1.	Ratings (student, supervisor, self)	28	7
2	Classroom observation	193	49
3.	Using Student Learning Outcomes (SLO)	174	44
	Total	395	100

From the table it can be seen that 49 per cent teachers favoured classroom observation, 44 per cent teachers favoured the assessment of teaching competence based on student learning outcomes and 7 per cent teachers were in favour of ratings. The number of responses in favour of observation and using results of SLO were tested for significance. The value obtained for the Chi-square test was 1.05, which is not significant for 1 df. This shows that both the methods are almost equally preferred by teachers. So it can be concluded that teacher assessment based on student learning outcomes can also be accepted as a prominent procedure.

2. Ranking of various components of student learning outcomes (Total N = 174), indicating teacher effectiveness

For further study, the ranking given for nine items of student learning outcomes were tabulated, a 9×9 matrix was prepared and the statements A, B, C ... were set in rows and ranks 1, 2, 3, ... in columns. For each statement the number of teachers (N = 174) who had given the various ranks were entered in the respective cells. Arbitrary weightages from 9 to 1 were given to ranks 1 to 9 respectively and the subject frequencies were converted into scores and entered into the cells, so that the maximum and minimum scores that a statement can expect are $9 \times 174 = 1566$ and $1 \times 174 = 174$. The percentage was also worked out and the ranks by the group determined. The data and results are given in Table 2.

Table 2 shows that the first rank is given to item (A), the next to item (I) and the last rank to item (E); this indicates that student achievement and student interest in the subject which the teacher handles are strong student learning outcomes while peer-group opinion regarding the teacher is the least preferred item for assessing teacher effectiveness.

3. Ranking of various student learning outcomes (Male Teachers N = 48), indicating teacher effectiveness

Here the weighted score of each male teacher's ranking, percentage and the final ranking of the group are calculated and presented in Table 3. It is seen that the first ranking of the group was given

TABLE 2
Ranking (Total Sample = 174) of Various Components of Student Learning Outcomes which Indicate Teacher Effectiveness

Ranks/ Components	1	2	3	4	5	6	7	8	9	Score	Percentage (%)	Rank
A	792	208	140	108	75	72	12	10	4	1421	90.74	I
B	135	192	147	102	105	112	81	14	2	890	56.8	VII
C	36	56	63	30	35	92	57	94	41	504	32.2	VIII
D	81	232	196	228	190	68	48	24	4	1071	68.3	III
E	27	112	35	42	20	28	72	88	49	473	30.2	IX
F	99	184	210	216	190	60	54	16	3	1032	65.9	V
G	189	160	168	108	85	88	105	24	10	937	59.8	VI
H	171	256	147	242	140	44	39	8	9	1066	68.1	IV
I	450	376	266	96	70	32	18	12	2	1226	78.3	II

to item (A), second to item (I) and the last rank to item (C). This indicates that student achievement and student interest in the subject which the teacher

handles are the strong student learning outcomes whereas parent's opinion about the teacher is the least preferred for assessing teacher effectiveness.

TABLE 3
Ranking (Male Teacher, N = 48) of Various Components of Student Learning Outcomes which Indicate Teacher Effectiveness

Ranks/ Components	1	2	3	4	5	6	7	8	9	Weighted Score	Percentage (%)	Rank
A	216	48	84	12	5	16	6	6	0	393	90.97	I
B	45	144	21	18	15	24	9	6	0	282	65.3	IV
C	18	24	21	6	15	12	9	30	9	144	33.3	IX
D	27	24	84	72	60	12	18	0	3	300	69.4	III
E	9	48	21	18	10	12	18	18	8	162	37.5	VIII
F	9	40	0	54	60	12	27	10	1	213	49.3	VII
G	45	48	42	36	25	40	18	0	0	254	58.8	VI
H	9	64	21	72	60	12	27	0	1	266	61.6	V
I	96	72	126	36	0	24	0	0	0	354	81.9	II

4. *Ranking of the various student learning outcomes (Female Teachers, N=126) indicating teacher effectiveness*

The weighted score of each female teacher's ranking, percentage and the final ranking of the group are calculated and presented in Table 4.

Table 4 shows that the first rank of the group was given to item (A), the second to item (I) and the last rank to item (E). This indicates that student achievement and student interest towards the subject which the teacher handles are the strong student learning outcomes whereas peer-group opinion is the last preferred item for assessing teacher effectiveness.

Conclusions

Based on the analysis of the data gathered using the questionnaire, here are some conclusions and suggestions:

1. The idea of using student learning outcomes for assessing teacher performance is supported by 44 per cent of teachers, and also, it is found that this method is as important as of classroom observation. So this teacher assessment technique could be used along with other methods of teacher assessment as mentioned by Einstein (2000), Sanders (2000), and
2. For assessing teacher's effectiveness one of the most acceptable methods of gathering information on student learning outcomes is through achievement testing; the second is the data regarding student interest in the subject which the teacher handles. The least acceptable method for the purpose is using peer-group opinion. The relative importance of the components is as under:

TABLE 4
Ranking (Female Teacher, N = 226) of Various Components of Student Learning Outcomes which Indicate Teacher Effectiveness

Ranks/ Components	1	2	3	4	5	6	7	8	9	Weighted Score	Perce- tage (%)	Rank
A	576	160	56	84	70	56	6	4	4	1016	89.6	I
B	90	48	126	84	90	88	72	8	2	608	53.5	VII
C	18	32	42	24	20	80	48	64	32	360	31.7	VIII
D	54	208	112	156	130	56	30	24	1	771	68.0	V
E	18	64	14	24	10	16	54	70	41	311	27.4	IX
F	90	144	210	156	130	48	36	6	2	822	72.5	III
G	144	112	126	72	60	48	78	24	10	674	59.4	VII
H	162	192	126	180	80	32	12	8	8	800	70.5	IV
I	342	304	140	60	70	8	12	12	2	950	83.78	II

1. Student achievement.
2. Student's interest in the subject which the teacher handles.
3. Student's oral responses to questions put in the class while teaching.
4. Student attitude towards the subject
5. Learning skills exhibited by the student while teaching.
6. Student attitude towards the subject which the teacher handles.
7. Student attitude towards the teacher.
8. Parents' opinion about the teacher.
9. Peer-group opinion about the teacher.

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Activity-based Classroom Transaction and Durable Learning

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D. DASH**

Abstract

The study aimed at finding out the effectiveness of activity-based classroom transaction in terms of quality of achievement of the pupils and retention of the competencies learnt. The study was carried out for environmental studies in Class IV in two schools, one a large-sized urban school and the other, a small-sized rural school in and around Bhubaneswar. A two-group experimental pre-test and post-test design was adopted. From the post-test achievement score as well as the intercept value of the linear regression model, it was noted that there was a significant increase in the achievement score following activity-based teaching as compared to the traditional method in both the small-sized class of the rural and large-sized class of the urban school. The decrease in slope value with the days was less and, consequently, the retention of competencies was more with activity-based transaction as compared to the traditional method of teaching in both the schools. The study revealed that activity-based transaction promotes true learning because of longer retention of concepts and competencies, both in large-sized and small-sized classes.

Key Words: Activity-based teaching.

The need for a literate population has been recognised as a crucial input for nation building and, consequently, Universalisation of Elementary Education (UEE) for all children in the age-group 6-11 has been accorded top

priority in our successive Five Year Plans. The National Policy of Education (1986) reaffirmed the national commitment of achieving UEE with the objectives of: (i) Universal access and enrolment, (ii) Universal retention upto 14 years of

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age, and (iii) a substantial improvement in the quality of education to enable all children to achieve essential levels of learning. Subsequent consistent efforts have resulted in a manifold increase in infrastructural facilities, and enrolment and retention of children but little is known about their quality of learning. Though learner-centred activity-based teaching is said (Mishra, 1996, Satapathy, 1998; Sharada, 1998) to promote joyful learning and enhance achievement, little is known about the quality of facts and skills learned and retention of competencies. Keeping this in view, the present study was taken up to find out the effectiveness of the activity-based classroom transaction on durability of competency learning.

Specific Objectives

The specific objectives of the study were:

- to find out and compare the effectiveness of the activity-based transaction with the traditional method of teaching in small as well as large-sized classes,
- to know the impact of activity-based teaching in promoting

learning and changing the attitude of learners,

- to find out the durability of learning through retention of concepts/competencies learnt by the pupils in the classroom through the activity-based transaction.

Methodology

The present study is an experimental qualitative research programme based on the action-research approach.

Sample

The study was carried out in two contrasting schools, one an urban English-medium school (Kendriya Vidyalaya School (KVS)) with large-sized classes and the other, a rural Oriya-medium school (Gadakana Primary School (GPS)) with small-sized classes located in and around Bhubaneswar. The details about the sample population have been shown in Table 1.

Duration of the Study

The study was carried out from January to April 2000.

TABLE 1
Statistics of the sample

<i>Name of the School</i>	<i>No of Boys</i>	<i>No of Girls</i>	<i>Total Population</i>	<i>Grand Total Population</i>
Kendriya Vidyalaya School (KVS)	47	60	117	162
Gadakana Primary School (GPS)	24	21	45	

Content and Competencies

The topic "Safe Water" was selected from the EVS II (Science) textbook of Class IV (NCERT, 1988a) for classroom transaction. Six specific competencies were selected and converted into teaching points. Considering the interest and abilities of the learners, suitable indoor and outdoor activities such as collection, verification, classification, experimentation, data collection and discussion were used in the process of teaching and learning.

Design of the Study

The experimental two-group pre-test and post-test design (Best and Kahn, 1996) was used in the study. In Class IV, the students were divided into two (experimental/control) groups randomly. The experimental group was taught by the activity-based approach and the control group by the traditional method. Four continuous classes were taken by the classroom teacher to teach the concepts keeping the competencies in view. The classroom teacher was given specific instructions to adopt activity-based teaching as per the plan. The teacher acted as a facilitator of learning both inside and outside the classroom. Students were encouraged to learn themselves as individuals or in groups through collection, observation, verification, experimentation, conclusion, etc. There was interaction among the learners and between the teacher and the learner. Teacher-made tests with multiple-choice objective type questions were used to assess the learners' achievement in pre-test, post-test and four subsequent tests carried out on

different days after the teaching (DAT). The conceptual model of the design has been shown in Fig. 1. A Likert (1932)-method 5-point attitude scale with 10 items was administered to the pupils three days before and after teaching to find out if the teaching had any impact on the behaviour of the pupils.

Data Collection and Analysis

The 't'-test was employed to find out the significance of difference between the mean scores of pre-test and post-test and of subsequent tests. The per cent increase in the scores of post-test over pre-test was compared between the methods in a school.

The per cent achievement scores were transferred into logit values and the transferred values were regressed with days after teaching, following the logistic model, to find out the relationship between achievement and days after teaching. The intercept and the slope value obtained from the model were compared for two methods of teaching.

Results and Discussion

The topic "Safe Water" from the EVS II textbook of Class IV was selected for the study because of its importance for human life, and also because the central government (Ministry of Environment and Forest) has been striving hard to create awareness about safe drinking water among children and adults.

In both the schools, there has been improvement in the achievement of students after teaching as reflected in the significant difference between post-test and pre-test (Table 2) and subsequent test scores (Figs. 2 and 3).

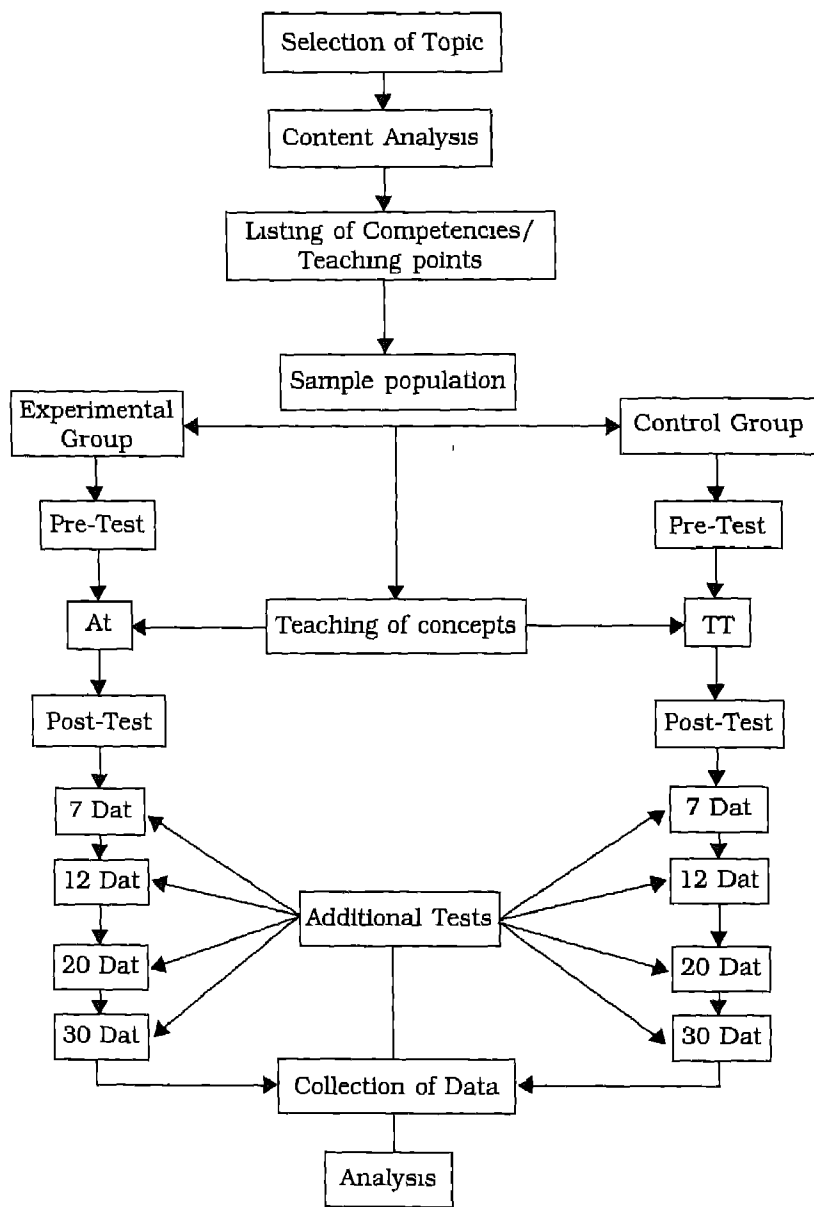


Fig. 1. Conceptual model followed in the teaching of EVS II

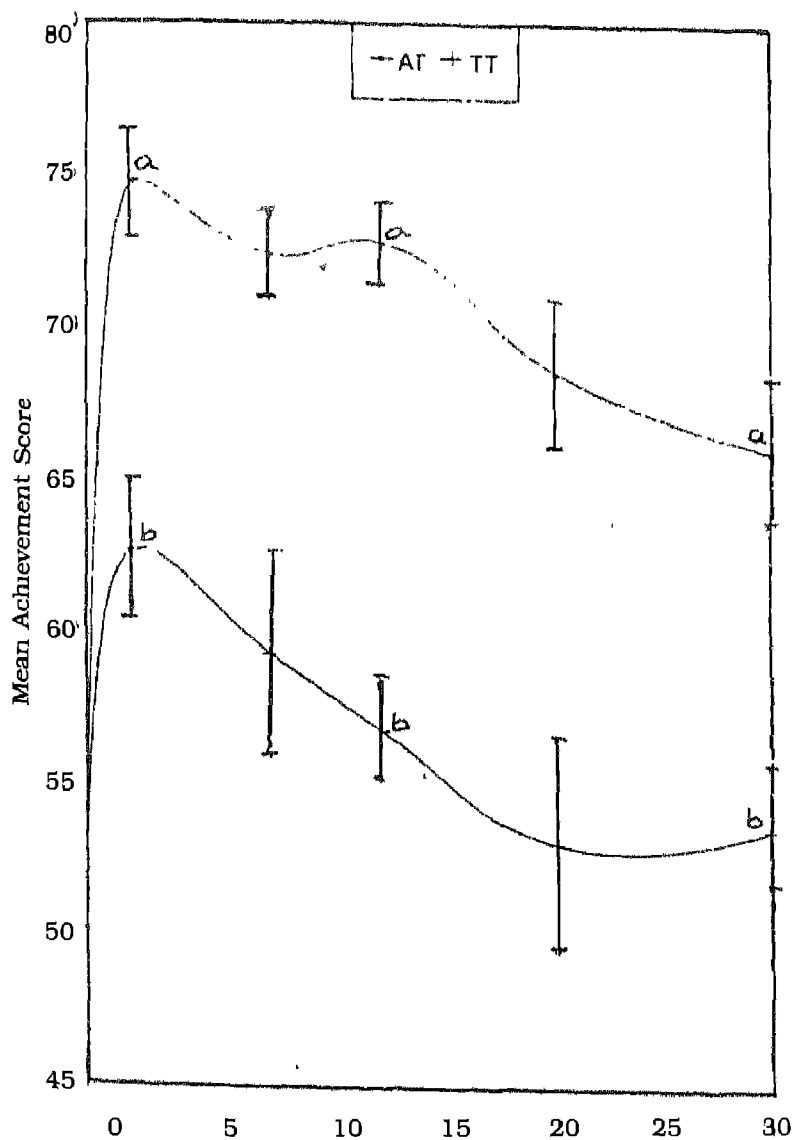


Fig 2 Change in Mean Achievement Score with Days After Teaching (DAT) for Class IV Students of KVS

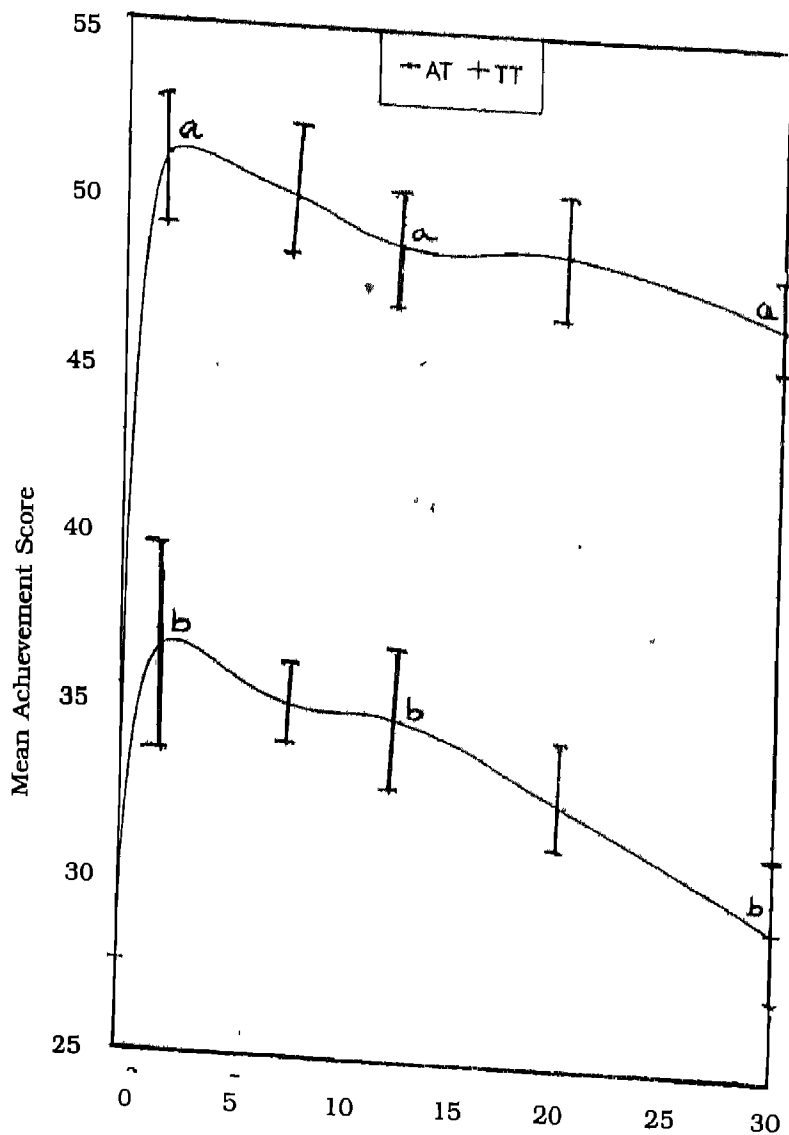


Fig. 3: Change in Mean Achievement Score with Days After Teaching (DAT) for Class IV Students of GPS

TABLE 2
Mean Achievement scores (in per cent) of Class IV students with Two
Different Approaches of Teaching of Environmental Studies

School	Method of Teaching	Mean Achievement Score		Difference
		Pre-test	Post-test	
KVS	Activity-based transaction	50.1 (± 4.2)	74.7 (± 3.9)	24.6**
	Traditional method	51.5 (± 6.2)	62.8 (± 5.1)	11.3**
GPS	Activity-based transaction	29.3 (± 4.7)	51.2 (± 4.3)	21.9**
	Traditional method	27.6 (± 3.8)	36.8 (± 5.2)	9.2**

Note. Values in parentheses in this table represent S.D.

** $P < 0.05$

The differences in the achievement sectors in the pre-test within a school was very minor, showing that the students in both (experimental and control) groups were almost equal in their background. The difference in the pre-test scores between the two schools could be due to the literacy of the parents, their socio-economic background, students' intelligence, etc.

There was an increase in the achievement score with activity-based transaction as compared to the traditional method of teaching in both the schools as reflected from the per cent increase in post-test score over pre-test (Fig. 4). In KVS, with a large-sized class, there was increase of 49 per cent, whereas in GPS, with a small-sized class, it was more than 70 per cent. Though activity-based teaching was effective in both the schools, it was relatively better in GPS. This could be due to the small-

sized class and low pre-test scores.

There was decrease in achievement scores with increase in DAT for both the methods of teaching in KVS (Fig. 2) as well as GPS (Fig. 3). Besides raw scores, from the fitting of data to the logistic model for KVS (Fig. 5) and GPS (Fig. 6), intercept was found high (Table 3) for activity-based teaching in both the schools, showing that children learn more with activity-based teaching. Further, the slope value (rate of loss in achievement score) was less with activity-based teaching (Table 3) compared to the traditional method of teaching, indicating that retention of competencies per child per unit time was more with activity-based teaching. This demonstrated the longer durability of the skills and competencies for students participating in activity-based teaching. The effectiveness of the activity-based classroom transaction could be due to

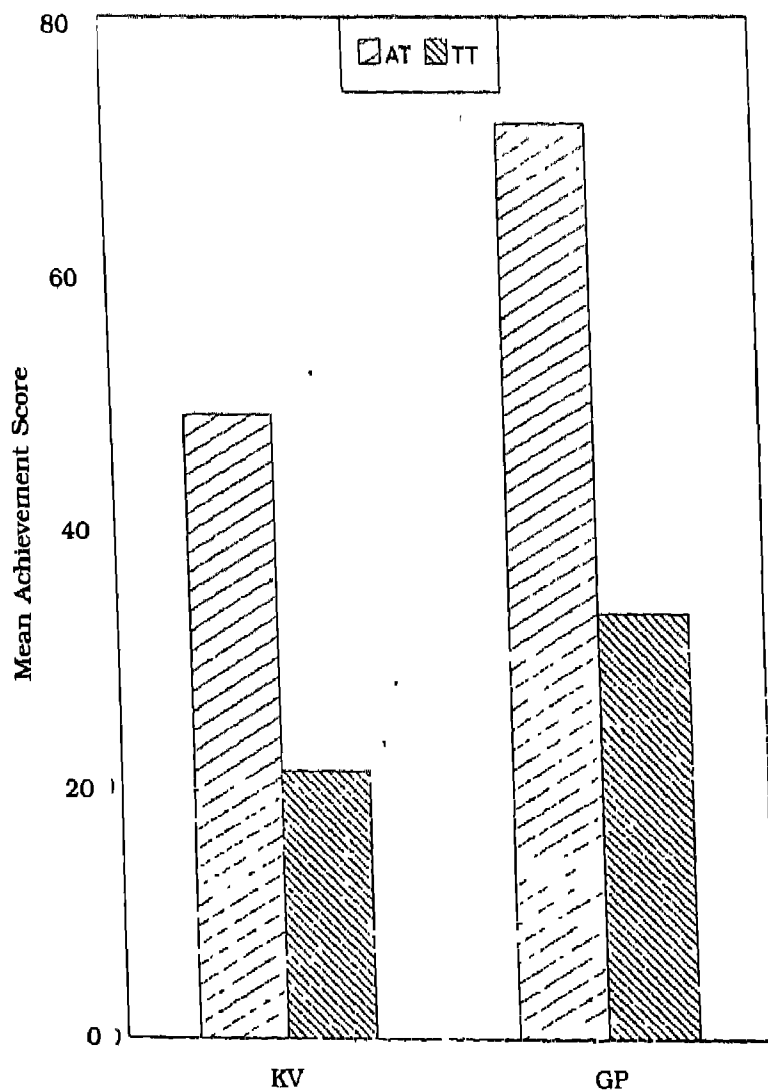


Fig 4: Percent Increase in Achievement Score in Post-test over Pre-test in Activity (AT) and Traditional (TT) Methods of Teaching.

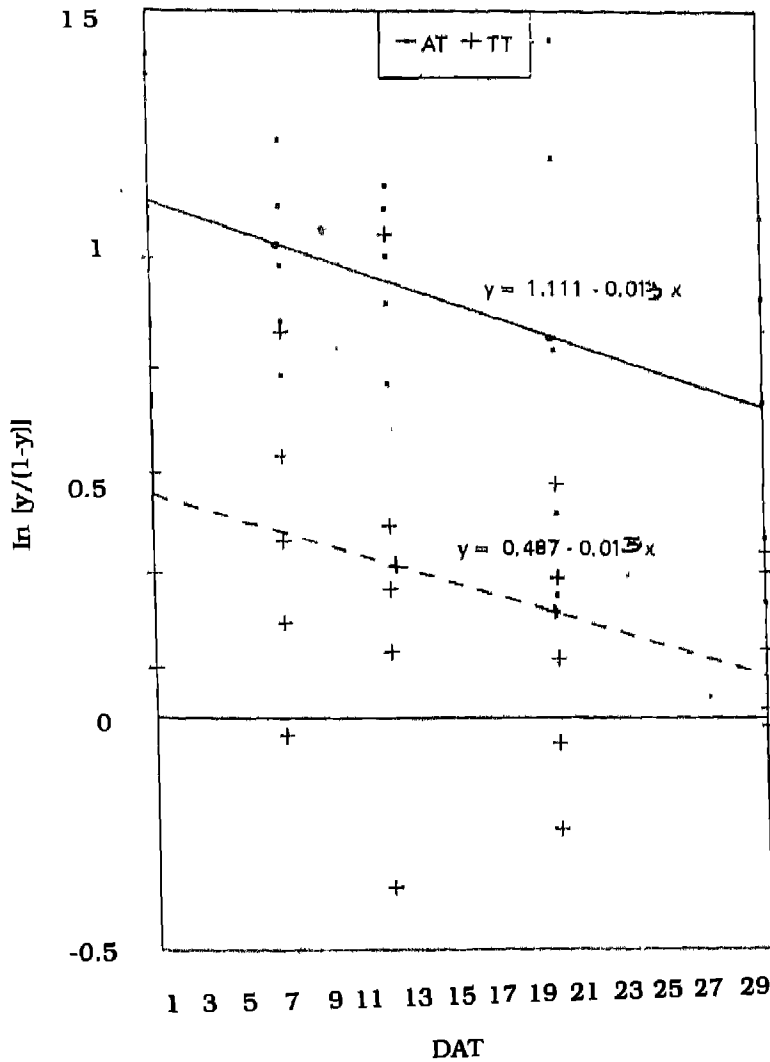


Fig 5: Decrease in Achievement Score with Increase in Days After Teaching (DAT) for Class IV of KVS

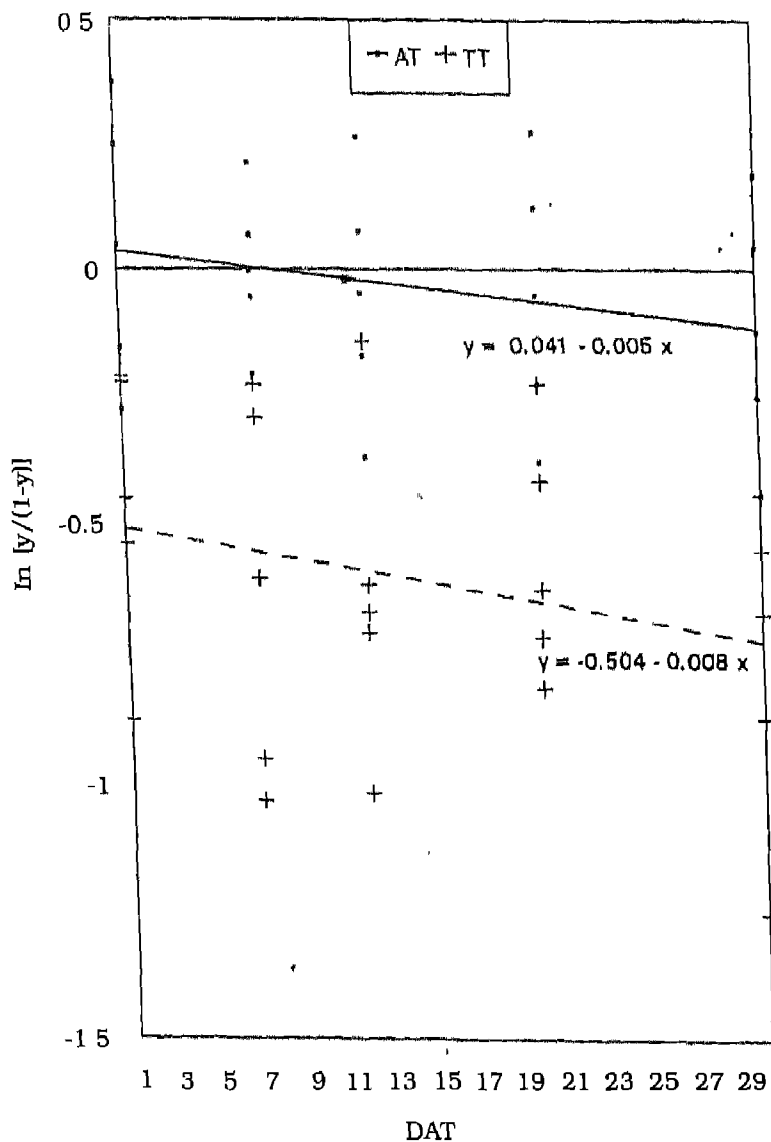


Fig 6: Decrease in Achievement Score with Increase in Days After Teaching (DAT) for Class IV of GPS

TABLE 3
Summary of linear regression statistics from fitting the linearised form
of the logistic model to achievement score data of two different methods
of teaching in two schools

Method of Teaching	Parameter Estimates			
	KVS		GPS	
	Intercept (yo)	Slope (r)	Intercept (yo)	Slope (r)
AT	+1.111	-0.013	+0.041	-0.005
TT	+0.487	-0.015	-0.504	-0.008

AT: Activity-based transaction.

TT: Traditional method of transaction

involvement of the pupils in learning and understanding of the concepts due to hands-on experience (Harlen & Elstgeest, 1993).

Though the children had positive attitude towards safe water before teaching, it improved and became stronger after activity-based teaching, as reflected from their mean scores (Fig. 7).

Environmental studies have been included at the primary level to develop awareness and understanding of the physical and social environment of the child (Patel & Patel, 1994) through organised investigation and systematic exploration. Through activities the child develops the skills and competencies of the basic mental processes (Basha, 1993) of observation, recording, classification, collection, ordering of data, prediction inferences, and the ability to make proper decisions as reflected in the *National Curriculum for Elementary Education: A Framework* (NCERT, 1988). The activity-based learner-centred teaching, besides making learning effective and joyful, enhances achievement and promotes

retention as observed in the present study. Further, students realise and develop skills and competencies to face the challenges that they are likely to meet in the future.

Implications of the Findings for School Effectiveness

The results of the present study showed that activity-based classroom transaction is very effective in promoting learning and improving achievement and retention of the competencies. It makes learning very durable for pupils, both in small and large-sized classes. Thus activity-based teaching should be organised irrespective of the school location and class size. Teacher may be given orientation in the teaching of EVS, following the activity-based approach as most of the teachers are not familiar with it (Mohapatra, 1998). Further, development of an activities bank and putting it at the disposal of classroom teacher may motivate and empower him to organise suitable and need-based activities. The teachers may also be given training in the use of low-cost local

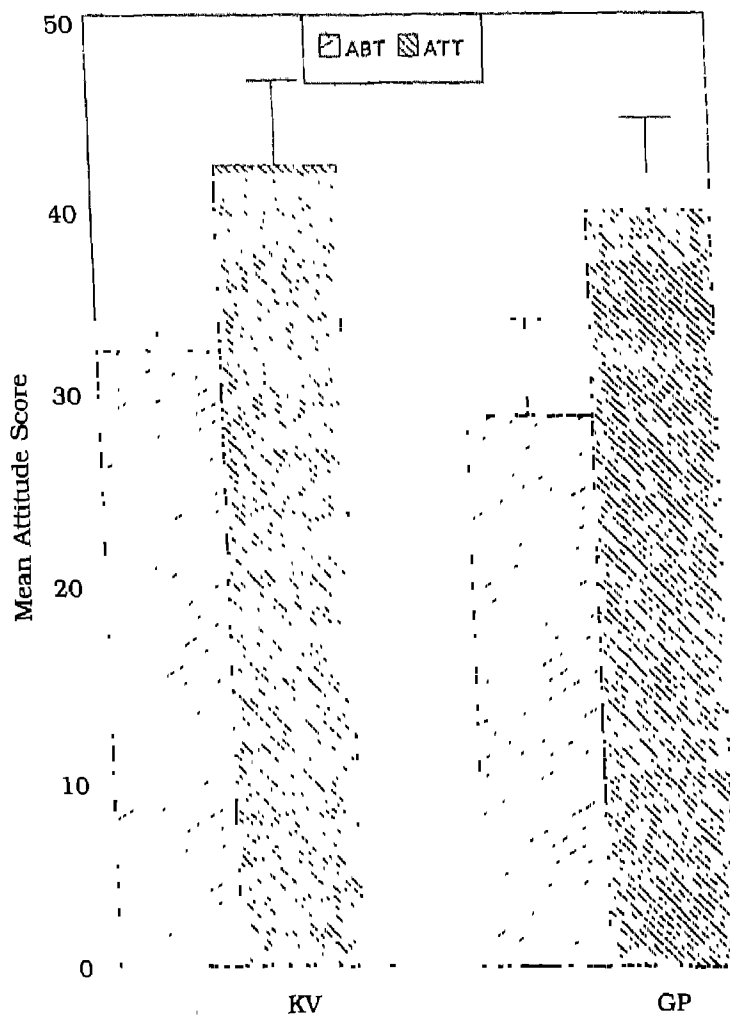


Fig 7. Mean Attitude Score of Class IV Students Before and After Teaching the Subject (ABT, Attitude Before Teaching, ATT, Attitude After Teaching)

specific activity-oriented materials (NCERT, 1996) because these, due to the students' and teachers' familiarity with them, are likely to help in the attaining of competencies by students as listed in the MLL (1991) document.

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Creating Resource Facility in Schools:

A Significant Tool in the Teaching-Learning Process

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Abstract

The transaction of knowledge as per the student's needs and interest has always been an area of focus, particularly so at the elementary school level. This paper attempts to suggest how the teachers and the school can effectively contribute to enhance student learning by innovatively organising and utilising the common available resources. It recommends the concept of resource facility as an aid to teaching and learning, its necessity and significance in the school system, steps of setting it up in the school as per the financial resources available, kind of material to be kept in the facility, infrastructural requirements and its apt utilisation. The paper also indicates the role of the teacher as a facilitator and resource developer working in consortium with other members of the educational community rather than an individual provider of knowledge.

Key Words. Resource Room Facility, Structured Activities, Unstructured Activities

Human beings and other higher animals not only possess the unique ability to learn from their environment but also to effectively communicate these learnings to their offspring. The difference, however, lies in how best the acquired knowledge is transacted to the younger generation so as to provide a platform to construct further upon. Human beings have been endowed with an inimitable high-ended

system of communication i.e. language—verbal, written, body gesture—helping them to exist and grow as a sharing society. Yet, at times the above-mentioned modes are insufficient to exact the transference and understanding of this acquired knowledge to the learner. Thus, comes into view the necessity of translating it into a distinct form appropriately termed as a teaching-learning aid.

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The teacher, being the facilitator of knowledge, continuously develops and evolves aids and teaching-learning material, according to the needs and requirements of the content and the learners. Over the years, this results in a gradual accumulation of teaching-learning material with the teacher that may or may not be seen or used by others. Such a wasting-off may be prevented, allowing a resource-sharing by all concerned with the education of the child! Thus arises the need of a 'resource room/facility' within the school system.

What Is a 'Resource Room or Resource Facility'?

A resource room may be defined as a space or any entity created within the school boundary for the organised upkeep, utilisation and development of teaching-learning resources. However, the term seems to be a misnomer as a 'room' may not necessarily be an unavoidable prerequisite. In this context, probably 'resource facility' may be the alternate terminology, by which it will be referred to in the rest of the paper. In the present scenario, a resource facility is often considered to be synonymous with a high technology computer lab with multimedia applications and plentiful CD-ROMs for different content areas. It is also often mistaken with an audio-visual facility equipped with all the modern gadgets. On the other hand, a resource facility is a totally different concept that needs to be studied as distinct from the rest.

Rather than being just a physical space within the school, a resource facility is a dynamic, ever-evolving entity wherein the educators/teachers, the

school authorities and the experts work in unison so that the ultimate benefit reaches to the child. It is a place where the environment, the teacher, the child, the school and the expertise of people and technology all function as resources that are integrated and utilised for enrichment of the teaching-learning process. It is not just a storehouse for various teaching aids/material but an open entity where innovation, creative imagination and co-learning, both on the part of the teacher as well as the pupils, play a key role.

Why a Resource Facility?

A resource facility serves the following purposes:

- Its foremost significance lies in giving 'knowledge beyond textbooks'. It provides the learners with an opportunity to explore a variety of learning material and learn from sources other than the regular textbooks.
- It aims to provide the pupil with a learning atmosphere that is free from fear and competition. Here, the pupil can learn effectively in a fearless and cooperative environment at his/her own pace.
- A resource facility provides enough scope to the learner for freedom of expression. The child can express his/her ideas in an informal set-up in whatever way he/she desires. For example, a child may be more comfortable in expressing his/her ideas through a picture rather than

in a written format! A resource facility gives the child an opportunity to behave as an individual rather than a group, which is normally the case in a regular classroom!

- Such a set-up also helps the teacher to observe and recognise children as individuals. Besides providing scope for individualised instruction, the resource facility also aids the teacher identifying the strengths and weaknesses of her/his pupil to take measures accordingly. The teacher can get a feedback about the needs of individual children and thus can develop better-targeted aids.
- Working in a resource facility helps in the development of various mental and manual skills in the learners. Creativity, design, organisation, interpretation and application, i.e. relatedness to real life situations, of thoughts and ideas is greatly enhanced. The pupils also learn to handle and manipulate various equipment and material, leading to an increased adeptness and dexterity
- A resource facility provides a common platform where the experts and the regular teachers together can interact informally with the students—this helps them to know how children learn, the things and activities which interest them, etc

- Last but not the least, it aims at a multi-pronged utilisation of resources, within the school between different classes or maybe between different schools, thus preventing wasting-off of isolated innovations and allowing a resource-sharing by all concerned with the education of the child.

How to Set Up a Resource Facility?

Setting up of a resource facility within the school requires careful pre-planning and a thoughtful approach on the part of the teachers and the school management. This paper attempts to suggest a step-wise procedure that may be followed for the establishment of a resource facility in the school system.

Step I. Before starting this task, it is imperative that all the people involved in it—Principal, Headmaster/Headmistress, teachers, timetable in-charge, school administration, particularly the Finance and Accounts office, and the school management/governing body—are truly convinced of the concept, need and significance of a resource facility. For this, a meeting should be conveniently arranged. Also, the experts to be involved for different subject areas and for development of teaching-learning material should be decided upon and intimated in advance.

Step II. This involves studying the range of age-groups of students that the resource facility is intended to cater to. Accordingly, it has to be decided whether to have one facility for the entire school, or may be two. However, due to a large

difference in the type of content to be learnt and the teaching methods that can be used, it is advisable to have two separate facilities or two parts of the same resource facility—a *junior section* catering to elementary classes and a *senior section* for the secondary and senior secondary classes

Step III. The next step involves planning for the type of activities that the resource facility will support. For example, it can provide for activities such as theatre, music and dance, arts and crafts, drawing, painting, clay modelling, puppetry, paper mache, model making, reading good children's literature, calligraphy, conducting small-scale science experiments, and so on. A list of all such activities should be prepared after discussions between teachers and the experts.

Step IV: Buildings. This important step involves listing all the requirements as per the above-stated activities and allocating finances accordingly. The required resources may be put under two

categories, *pre-existing resources* and *resources which are to be procured*. These resources need not be expensive since the innovative and hardworking teachers along with the experts can easily make many low-cost aids/materials. Students can also be trained in making good illustrative charts and models that they can prepare during their holidays. Besides enjoying this task, students will also gain many useful skills in the process. The school management can also contact the NGOs involved in education, particularly elementary school education, that will be willing to sponsor the establishment of the resource facility.

Step V. This involves calculating the pooled resources and dividing the requirements priority-wise. Accordingly, the process of setting up of the resource facility can be phased into Stage I, Stage II, etc. with the resources being added each year.

For Example: This organised additive process may be represented in a tabular

TABLE 1

Requirements*	First year	Second year	Third year
Basic facilities—room (optional), furniture (optional)	↔		
Assorted resources and low-cost aids/material-charts models, worksheets, board games, herbaria, etc.	↔	↔	↔
Children's literature	↔	↔	↔
Educational kits, CD-ROMs		↔	
Aquarium, terrarium, some equipment for science experiments		↔	↔

* Requirements will vary from school to school. Also, this should not be taken as the complete list of required resources.

form below for ease of reference.

Step VI. The resource facility should be kept under the guidance of an in-charge who will be responsible for its maintenance and upkeep. A stock register, catalogue register, issuing register and set of instructions for use of resources must be maintained. A team of creative teachers may be assigned the task of regular upgradation and addition of resources to the facility in collusion with the experts. At least two continuous periods per week should be allotted for work in the resource facility. The timetable in-charge need be informed accordingly. Last, but not the least, a workshop should be organised for training the teachers in the use of this facility.

What Should Be the Infrastructure for a Resource Facility?

Depending upon the financial capacities for the educational institution, a resource facility may be:

- High-budgeted facility
- Low-cost facility.

High-budgeted Facility

The resource facility can be created in a sufficiently big well-ventilated and properly lit hall or room that can accommodate a class of 30-35 students. It can be supplied with cupboards to keep the resource material. Though comfortable seats may be kept, care should be taken not to clutter the room with chairs and desks. A resource facility can be best utilised if it has enough open space. It can be equipped with: a computer, LCD screen, TV, video, audio system, slide projector and

overhead transparency projector, an aquarium, a terrarium, a mini-lab space with some equipment for small experimentations, white board, notice/bulletin boards, etc.

Low-cost Facility

Creating such a facility is important and more meaningful in the present Indian-school context. Rather than an elaborate infrastructure, this resource facility depends upon a strong conceptual base and requires much creative input on the part of the people concerned. It can be creatively set up in the school corridor or spread between classrooms or even under a tree! The resources can be low-cost, made of locally available material. Used packing cartons can be utilised for storage of resource material which, when kept one above the other, will form convenient cupboards and as per requirement its shelves can be increased or decreased. For display of charts and material prepared by students, etc. the walls of the classroom or corridor or branches of trees can be creatively utilised. Charts, books, magazines, etc. can be hung on a string/rope tied to the branches or on the walls.

What Should be Kept in the Resource Facility?

The resources to be kept in the facility can be grouped under two categories:

- Organised resources, and
- Assorted resources

The organised resources include aids and material, both instructional as well as experiential. It includes board games, other types of games, models, charts, puppets, material for art and craft

activities, worksheets, children's literature books, collection of short stories, poems, folktales, etc. As per the budget allotted, this section may also include an aquarium, a terrarium, audio-visual projection aids (listed elsewhere in this paper). These resources are to be kept in an organised manner and properly catalogued, may be grouped according to the concept dealt with, for easy retrieval and issuing. All the material must be accompanied by a set of instructions for its effective use in teaching and learning. A catalogue register may be made that includes a list of material/aids grouped under appropriate heads along with a brief write-up about the particular material, for example, the age group it caters to, the concept(s) it deals with, the material it is made up of, etc. A separate issuing register may be maintained for students as well as teachers.

Assorted resources include material that a child comes across in day-to-day living. One corner of the facility — "*the creative corner*" — can be devoted for the upkeep of such material. Things like toothpicks, matchboxes, matchsticks, used toothpaste tubes, straw, soft drink cans and bottles, 'Fruity' packs, pebbles, ice-cream sticks, buttons, old newspapers, magazines, cards, wool, photographic film and its cans, cycle-tyre tube, old ball-pen refills, magnets, beads, etc. can be put in shoe boxes and kept aside. Some stationery items—sketch pen, crayons, water colours, brush, pencils, pen, drawing sheets, paper, etc.—may be kept for use by children.

Besides the above-mentioned things, the resource facility can have a "*music*

section" including musical instruments like harmonium, *tabla*, *dholak* and flute, etc. for facilitating theatre activities. In order to stimulate an informal environment, the resource facility may be imaginatively divided into: a play section—*aao khelein*, a reading area, an exhibition space for display of material made by students, the creative corner, "*dadima.ka pitara*" for the assorted material, etc.

How to Use a Resource Facility?

Two kinds of activities can be performed in the resource facility

Structured or Pre-decided Activities: These include games, worksheets, reading material, organised drama, music, puppet shows, etc. Different students may be given different tasks. Here, the teacher plays an active part—providing reinforcement, instructing, organising, making corrections, etc.

Unstructured or Impromptu Activities: These include the use of resources, particularly the assorted resources, by the students out of their own choice and interest. The students may be allowed to work in whatever way they like. Here, the teacher takes on the role of an avid observer, participating only when asked to but carefully providing hidden guidance to the students throughout their tasks.

Some resources, like charts, models, etc., may be utilised for supplementing classroom teaching.

A few things may be kept in mind to get the best out of a resource facility:

- Teaching-learning aids/material should be *integrating* many concepts of a subject area

or interlinking different subject areas, as far as possible. This is to provide a wholesome knowledge to the learners about the various phenomenon

- The majority of the resources should be such that they could be used *across different classes*.
- Activities wherein the learners can *take home* their handiwork should be used more frequently. This provides a sense of ownership and belongingness to the students.
- Low-cost aids/materials that the students use *without the fear of breakage* must be kept.
- Use of resources must be linked to *rewards* in order to generate and sustain students' interest and motivation. For example, *bundi* stickers may be used with the colours signifying feedback on their performance
- A *resource facility report* may be maintained for each student

that will give a descriptive account of the child's interests, acquisition of skills, social behaviour, etc. This report can be used by the teacher for planning her lessons and also in the development of resources

The present education scenario in Indian schools demands attention to the organised development, utilisation and networking of resources. Establishment of resource facility in the schools not only provides a fearless environment for learning beyond textbooks but also helps the educators in knowing the individual in every child. The facility prevents wasting off of isolated innovations, allowing sharing and utilisation by a larger system. In Indian schools, where availability of financial resources is a limiting factor, understanding a resource facility as a creative concept rather than a physical infrastructure holds much significance.

Promoting Lifelong Meaningful Learning and Understanding of Science

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Abstract

The National Curriculum Framework for School Education-2000, designed by the NCERT through several debates, discussions and seminars across the country, is now fully through amidst lots of appreciation and positive criticism, apart from comments by policy makers, educators, students and the public. As a step ahead in this direction, in this paper, a few innovative ideas and thoughts are proposed, which would help in the development of the science curriculum. The emphasis is on a better understanding of science as well as on lifelong meaningful learning. The authors further propose partnerships in educational processes, along with knowledge integration. The role of computers and information technology cannot be neglected and will be the base in this regard. Science curricula have to be adaptable and responsive and scientific knowledge has to be relevant and accessible throughout life.

Key Words Science Education, Lifelong Learning

Everyone agrees that science education is in a sorry state. Government officials, industry executives, educators, and policy makers, who might angrily attack each other over a variety of economic, social, or political issues, join forces when it comes to complaining that many students lack an understanding of science. Suggestions for quick fixes in

science education come from every imaginable group and take every imaginable form. We have seen group learning, discovery learning, management by objectives, local (or state) control, quality processes, smaller class size, computers, networks, the World Wide Web, teacher certifications, school uniforms, assessments,

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integrated science, increased science requirements, new standards, and a myriad of other 'solutions' offered for improving science understanding. Although none of these approaches succeeds by itself, the National Curriculum Framework's fascination with immediate rewards fuels a continuous quest for a simple, straightforward solution to a problem that is particularly vexing, because it is extremely complex. The reality is that complex problems demand multifaceted solutions. Fixing science education—like curing cancer, managing energy usage, or creating transportation systems—requires designing multiple approaches, supporting local adaptations, and synthesising experiences into a coherent framework. Rather than a quick fix, we advocate a process of continuous improvement for science education in which teachers, scientists, educational researchers, technology specialists, curriculum designers, and students work together as partners to improve learning outcomes. For several years, we have studied how students learn science and also ways to make scientific knowledge accessible and relevant to them, not only for the time spent in the middle school or high school classroom but also for the rest of their lives. This paper relates our views and provides an instructional framework that new partnerships can use to get a head start on curriculum design. We advocate forming partnerships for this endeavour, because the problems of science education require expertise from many disciplines and we need large-scale efforts in schools, districts, and states in order to have a serious impact.

Students as Lifelong Science Learners

We cannot possibly teach students all the science we want them to know, in science courses. Instead, we need to prepare students to continue to learn science after they complete their formal schooling. The question is how to set them on a path towards lifelong science learning. Many middle school science texts, for example, attempt to 'cover' everything. They feature several topics like mechanics, genetics, electricity, heat, the periodic table, photosynthesis, light, and the circulatory system—spread over the school year. This fleeting coverage of topics means that many students memorise, isolate, and forget the science they encounter. Yet groups setting science education standards have difficulty agreeing that any topic be dropped. One of the major goals of science education is to discover how topics can be taught to foster lifelong learning. How can we enable students to learn additional science topics when the need arises? This is possible only by having the *Computer as Learning Partner*. We must study how students respond to class instruction and use computers, teachers, and peers as learning partners. Students can make progress in understanding science, but may not integrate what they know in some areas. The *National Curriculum Framework for School Education – 2000* of the NCERT has been designed to meet the varied needs of the students.

Another question we need to address is, how to make science personally relevant. Today, science students often complain that the science they learn in school plays no role in their lives, and

they report little interest in continuing to learn science. They feel that objects in motion may well 'remain in motion' at school, but they come to rest at home! To promote lifelong learning, we must offer students courses that provide scientific ideas they can revisit, reuse, and refine after they finish science classes. They need connections between the problems they face in their lives and the material they study in class. And they need an understanding of the character of science to guide their future learning. The Computer as *Learning Partner* can respond by providing students with problems that are personally relevant and an approach to learning that they can use throughout their lives.

What are *personally relevant problems*? These are problems that individuals care about, such problems can bring science to life and motivate students to carry out lifelong investigations. For example, determining how to survive in the wilderness, discovering how sunglasses work, or distinguishing among nutritional options are problems that engage students in the work of science: considering alternatives, gathering evidence, and identifying research questions. Ultimately, we hope lifelong learners will identify new problems for themselves and continuously revisit the ideas from their science classes. We refer to students who orchestrate their own science learning as *autonomous learners*. Science courses can encourage students to become autonomous. Science courses can include projects that permit students to apply what they learn, identify what they need to know, and find answers to their questions.

Knowledge Integration: Building on What Students Know

Our classroom interviews and observations reveal that middle school students come to class with many disparate and often contradictory ideas that apply to the same scientific problem. For example, while scientists agree that temperature is a measure of heat and that heat is the amount of energy in a material, students have a variety of views. When asked to distinguish heat from temperature, students might have four or more answers, each of which they use some of the time. Thus, they might believe that heat and temperature are interchangeable, because we say "turn up the heat" and "turn up the temperature" when we mean the same thing. They might believe that "heat" is the higher temperature on a thermometer. Or they might remember that they can feel heat in a hot wind, and so conclude that heat is a substance and temperature, a 'measure'. In contrast, they might conclude from television coverage of the 'heat index' that heat is a 'measure', like temperature. To help students become *lifelong science learners*, we can encourage them to integrate what they know rather than to hold disparate views like these.

There has been a lot of discussion on integration of knowledge. What is integration of knowledge? It is a process of comparing ideas, distinguishing cases, identifying the links and connections among notions, seeking evidence to resolve uncertainty, and sorting out valid relationships. Students who integrate their ideas seek coherence among diverse perspectives and converge on robust

ideas that they can apply widely. Knowledge integration drives scientific research, just as it drives student learning. Our goal in promoting lifelong learning is to help students continuously link and connect ideas. By identifying pragmatic science principles and pivotal cases that apply to the problems students face and by using these principles and pivotal ideas to help synthesise the ideas that students bring to class, knowledge can be integrated to personally relevant problems.

What do we mean by 'pragmatic science principles'? Scientific principles are pragmatic when they synthesise a rich set of practical experiences and can be used to deal with new practical problems. To distinguish between heat and temperature, for example, one pragmatic science principle would state: "When only mass differs, the temperature of the larger mass will change more slowly". Students might confirm this principle by observing that a large tureen of soup stays at a higher temperature longer than a small bowl of soup. They could apply this principle to practical questions like: "To keep ten pizzas hot, should we stack the pizza boxes up or spread them out?" Or, "Why is it better to put a burned hand in a pot of cold water than to wrap it in a wet cloth?" Or, "Should we turn on the shower to fill the tub with hot water to warm the bathroom?"

What are 'pivotal cases'? When students try to integrate what they know, but lack sufficient information, they might flounder or even reach a conclusion that scientists would dispute. How can we support and encourage

knowledge integration that leads to more robust, cohesive, and scientifically normative thinking? We identify cases that, when added to the mix of notions students bring to science class, serve to stimulate the process of sorting out diverse ideas. For example, if students believe that 'metals feel cold and can impart cold', we can use this notion to a broader investigation of insulation and conduction by asking them to investigate how metals feel in a hot car. Instructional designers at all levels wonder which cases will be pivotal. Good choices help students with their struggle to make sense of science. We also worry about what level of analysis of a scientific problem will be most appropriate. We will have to debate whether to describe heat energy at the molecular level, as was typical of middle school texts, or at the level of heat flow.

Richard Feynman (1999) describes the choice of level of analysis for college-level physics:

"... what should we teach first? Should we teach the correct but unfamiliar law with its strange and difficult conceptual ideas, for example, the theory of relativity, four-dimensional space-time, and so on? Or should we first teach the simple $E = mc^2$ - constant-mass law, which is only approximate, but does not involve such difficult ideas? The first is more exciting, more wonderful, and more fun, but the second is easier to get at first, and is a first step to a real understanding of the second idea. This point arises again and again in teaching physics."

Much of our effort must be devoted to select the pivotal cases, the level of analysis for pragmatic science principles, and the personally relevant problems that enable most students to integrate their knowledge successfully.

Curriculum Design Partnerships for Lifelong Learning

Today's science curriculum is often 'decreed' by standards committees, textbook adoption committees, or curriculum authors. Yet, no fixed set of instructional materials can succeed with all learners, in all settings, for all time. Furthermore, 'decreed' materials often lack connections to the personally relevant problems that interest students and lead to lifelong science learning. Learners, settings, technologies, and science itself all change regularly. In addition, we continuously gain new understanding of effective pedagogy from classroom research, from teachers, and from students. Instead of instruction based on a 'decreed' curriculum, we need instruction that is informed by interactive redesign and continuous improvement. We need design teams that bring together individuals with diverse experiences who can all contribute to a flexible, responsive curriculum. We advocate partnerships composed of experts in the science disciplines, classroom instruction, educational technology, pedagogy, school policy, and related topics, who come together to design curriculum materials, develop assessment materials, carry out experiments in diverse classrooms and refine curriculum based on these experiments, and who report their

findings to others, and continue this process. To illustrate our thinking processes, we need to discuss our failures as well as our successes, and we need to design studies that will help us select among alternatives. We have to synthesise our experiences into what we call the Scaffolded Knowledge Integration framework; and we need to provide some specific guidance in the form of pragmatic pedagogical principles that synthesise our experiences in ways we hope can be readily applied. We describe knowledge integration as the process of linking, connecting, distinguishing, sorting out, reorganising, and reconsidering scientific ideas to achieve coherence. Scaffolded Knowledge Integration refers to an instructional process that enables individual learners to engage regularly, effectively, and continuously in knowledge integration and lifelong learning. We chose the term 'scaffolded' because successful instruction supports students and enables them to integrate their knowledge, just as the scaffolding around a building supports construction workers and enables them to improve the building. Scaffolding enables learners to identify their notions about a scientific topic, consider some experiments, make connections to pivotal ideas, and integrate their perspective into a more robust and coherent view.

What are 'pragmatic pedagogical principles'? Pedagogical principles are pragmatic when they synthesise a rich set of practical, instructional experiences and can be used to deal with new practical problems. Our pragmatic pedagogical principles must intend to

give a head start to new partnerships designing science materials. For example, "Explain scientific processes and demonstrate mistakes". This principle is part of making science thinking visible to students. Too often, teachers only describe an outcome or a solution without explaining how knowledge was integrated to reach it. From experience, we discovered that many teachers only described a brilliant correct solution. In calculus or geometry, frequently only the successful proof is provided. As a result, some students conclude that knowledge integration, the process of sorting out alternatives, indicates a lack of skill in science. When teachers explain the scientific process and demonstrate (and explicate) mistakes, they model knowledge integration and enable students to recognise this process in their own reasoning. Pragmatic pedagogical principles should offer teachers ways to use their own practical experiences to scaffold knowledge integration. As a key element, our discussion of scaffolded knowledge integration should focus attention on the ways in which computers can help teachers implement the pragmatic pedagogical principles. For example, scientific-visualisation software can help explain a scientific process and demonstrate mistakes.

Science Teachers as Lifelong Designers

Just as science curricula must be adaptable and responsive, so must science teachers be lifelong designers of science instruction. We should know how teachers benefit from a personal plan for fluency in information technology. We

also must know how teachers can participate in partnerships for designing science curricula, school technology plans, or other educational innovations

Pedagogical Content Knowledge

Devising personally relevant problems, or pragmatic scientific principles that build on student ideas goes way beyond the scope of current school/university science courses. Even teachers with the most comprehensive science background will encounter many topics, questions, and problems that they cannot explain. Science teachers need to develop pedagogical content knowledge. By this we mean knowledge that helps the teacher understand the ideas students bring to the science class. Teachers with pedagogical content knowledge of thermal phenomena will understand it when students assert that "metals impart cold". For each science topic, teachers continuously face students with novel ideas. The challenge is to develop responses that keep these students engaged in knowledge integration. One way for teachers to advance pedagogical content knowledge is to band together in electronic communities with others working on the same topic. A variety of group and individual resources that teachers can use to continually integrate their knowledge is available on the internet.

Local Adaptations of Instruction

Science teachers can help students become lifelong science learners by adapting instruction to local conditions. For example, students studying energy

might investigate local options for home insulation and examine the role of insulation decisions in energy conservation. In environmental science, students might study local ecosystems, such as prairies, rain forests, deserts or urban parks. Often, teachers create local adaptations that would be used by others but lack ways to report their findings. Others may face difficult instructional challenges and wish for support from peers or outside experts. Teachers can help themselves through partnerships to address these issues. We must learn how technological tools and web resources

can support partnerships. By taking advantage of a website to report experiences and locate information, teachers can overcome isolation and build on each other's experiences.

Conclusion

Looking ahead, we hope this paper will motivate those concerned about the future of science education to learn from failures, build on successes, and join together in partnerships to improve science learning, science instruction, and science education research

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Book Review

Education and the Disprivileged: Nineteenth and Twentieth Century India, Edited by Sabyasachi Bhattacharya, Orient Longman, New Delhi, 2002, pp. x + 342, price not mentioned.

Recent researches on the impact of reforms and globalisation indicate that inequality among regions has been widening. The inequality is widening in not only economic dimensions but also in social development, say between communities and gender and the like. Though critics point fingers at the government's changing policies, yet the question remains how the effects of forty years of Nehruvian socialist planning would wane away in one decade. Rather tracing the widening inequality just from the developmental paths during the past half a decade, essays in this book illustrate how differential access to education particularly the western (read colonial) education during nineteenth and twentieth century British India led to inequality of educational outcomes among different sections of the population. The historical discrimination in access to education for certain sections of society, the book argues, led to the present differences in literacy and skill-related outcomes in India.

This book, a product of social scientists from different disciplines, viz. anthropology, economics, and history and education could also be considered as the one, which traces the origin of educational access to the disprivileged. The term 'disprivileged' referred to as those who were denied access to

education for generations together for which we have historical evidence, viz. the group of castes who were outside the four *varna* system of ancient Hindu society, tribals, women, working classes and some communities of *shudras*. The reference to "Hindu" arises due to the fact that the prevailing belief systems widely prevalent in the Indian subcontinent gave religious sanction in denying educational access to these groups. This book attempts to look into various forces that were operating in the colonial India when the social transformation (particularly educational access) took place.

The need for access to education has been extensively dealt in human capital theories in economics and social mobility and social stratification theories in sociology. Both the approaches are more closely linked to access to labour market and sustenance of livelihood, which reflects in patterns of social mobility. In the words of Bhattacharya, 'to the extent, access to education promotes social mobility, i.e. to the extent, education imparts marketable skills, improved life changes, a culture appropriate to a higher status in society, and formal qualifications which secure better paid employment—inequality between the privileged and the disprivileged in terms of education obviously preserves pre-existing social inequality. Hence, a self-perpetuating system.' (p 14)

During the colonial period, the British Indian government with discriminatory education policies was very particular in preserving the

hierarchical systems that existed in the Indian society so that they could and in fact 'successfully maintain their hegemony. This resulted in sharp inequalities among different sections and 'further reinforced the old privileges' with ambiguous outcomes. On the one hand the privileged intelligentsia critically reacted against colonial education and called for 'national education' and on the other enjoyed the benefits which the colonial education provided and denied educational access to some sections within the society. In this process some sections who were in middle ranks in the hierarchy, i.e. the present backward classes, also benefited through cooptation and achieved social mobility. This led to a kind of tendency towards the convergence of privileges/disprivileges in terms of caste, class and gender. The entry of both the disprivileged and privileged into the formal education system resulted in three modalities: (a) reproduction and perpetuation of inequality between two categories; (b) a part of disprivileged may get upward social mobility without affecting privilege as a system and (c) challenging privilege or inequality as a system. However, the 'transition from one mode to another is defined by degree of identity consciousness to passive acceptance or cooptation or challenging the system'.

If one wishes to understand the origin of a historical phenomena, a simple way is to look into: (i) the then prevailing situation; (ii) study the background of persons and institutions who initiated changes and identify factors motivated; (iii) nature and modes of instruments they used and support

mechanisms; (iv) problems encountered; and (v) aftereffects which include the contemporary situation and lessons for future. Even though most of the essays in this book deal with three colonial regions, viz. Bengal, Maharashtra and Madras (Andhra Pradesh in particular), after reading the book, one will tend to feel that the outcomes and understanding that the book provide us are applicable to the whole of the present India. For each section of the disprivileged, all the five angles referred to above are answered in these essays.

Chinna Rao Yagati portrays the state of the social system and educational conditions in his essay, "Emergence of Dalit Education and Identity Formation in Colonial Andhra". He says, 'In ancient India, the traditional Hindu social structure seems to have evolved a system of allocation of rewards relating to prestige, power and wealth in such a manner that each of the three 'higher' *varnas* (*dwijis*) could get one of these. Thus, the *brahmin* received the highest prestige in society, the *kshatriya* the greatest power, and the *vaishya* the largest share of wealth. The remaining sections of society, broadly called *shudras* (occupational or manufacturing castes), rendered services of a personal nature, and were engaged in growing food or in manufacturing articles of necessity and comfort. The reproduction of culture through education is known to play a key role in the reproduction of the whole system. It served as a patent means of social control. This is why traditional Indian education was limited to a few privileged castes.' (p. 87)

Except the fact that this explanation understates the questions of role and

status of women in those societies and their reactions and how spiritual leaders (naayanmars) of bhakti movement (in South India) emerged from untouchables as well, one can easily visualise the stagnated pre-colonial society existed over a long period of history.

Who were behind the educational initiatives of oppressed sections of the society? In Maharashtra it was the initiative of many individuals whereas in case of Madras, communities as a whole initiated it. In case of women, it was social reformists within the national freedom movement. As far as the working classes of textile industries are concerned, the urges for workers' education have come within.

Maharashtra, one of the fast growing states, had seen the seeds of social transformation sown from Phule to Ambedkar. Some of them were known to the outside world, some were not and some were deliberately ignored. Eleanor Zelliott picks up a few from all these three groups and their contributions towards the education of the oppressed: (a) Jotirao Phule (1828-1890), (b) Sajajirao, The Gaikwad of Baroda (1875-1939), (c) Vithal Ramachandra Shinde (1873-1944), (d) Shahu Chhatrapati, Maharaja of Kolhapur (1874-1922) and (e) Bhaurao Patil (1887-1959). In Bengal and Madras, it was not at all indigenous Christian missionaries played greater role in these regions. American missionaries started the first girls' school in Bombay presidency in 1824. Generally it is argued that the proselytisation was the main purpose behind such efforts. However, it was not that easy. One can find, even after ten years of establishing a school in Ranchi,

not more than 50 students enrolled in a school started by the colonial government. Though the government targeted the tribals, initially they hardly had shown any interest in sending their children to schools.

When women were allowed to get access to education in Bengal, it was more due to the emergence of new middle class. When they started enjoying the fruits of western education and employment in the British administration, they found their men educated whereas the women illiterate. In order to satisfy the requirements of educated men, women were sent to schools.

Samita Sen in her essay, "A Father's Duty: State, Patriarchy and Women's Education" says that the society and government, both the colonial and the post-colonial governments perpetuate a 'clear gender and class bias operating against any project of mass education for women'. To quote her major findings from Bengal documents, "The women education which was primarily an elite project, the cooperation of family came more fully only when social and economic change overtook the orthodoxy of the earlier generation. Till then, the educators had to negotiate and compromise their aims to win the authority of family. Girls' education became an accoutrement of class status, necessary for their marriage, for fulfilling their roles as elite wives with quasi-public duties, for mothers nurturing the citizenry-to-be with a self-conscious responsibility to the future nation. . ." (p. 232).

Parimala Rao brings out how through media such nationalists

questioned education for women. When Christian missionaries opened schools in some places of Bombay presidency, B.G. Tilak, who spearheaded the *swaraj* movement, was deadly against social reformists' call for women's education and abolition of child marriages. Parimala Rao analyses his opinions and supporters', which came out in *Mahratta*, a journal of which Tilak was editor. To quote Rao, "Tilak's understanding of the question of child marriage was different from that of the reformers. Tilak's orthodox and patriarchal mind refused to accept the reformers' argument that early motherhood ruined the health of both the mother and child, and the existence of a large number of child widows was the direct result of child marriage. Tilak argued that early marriage hardly affected women, rather, it was the boys who married had to discontinue education and take on the responsibility of maintaining a family at an early age, in turn denying society their possibly strong leadership. Tilak was silent on the issue raised by the reformers that the additional years secured in a girl's life by raising the age of marriage could be used to educate her (as well as the boys too)' (p 238). Rao says that even though such move of Tilak was aimed at getting the support of the upper caste elite for a militant Hindu nationalism, it was very clear that the demand for *swaraj* had an anti-women bias.

When children from oppressed classes entered the classrooms, it was not only the *brahmins* but also the backwards—'the recently promoted upper *shudra* castes'—who strongly resisted against them and maintained

the caste prejudice. In colonial Andhra, the 'modern' education was strongly resisted by backward communities also for reasons relating to traditional occupation. For them, it was not acceptable as it contained little in helping them to develop their traditional activities/occupations. To quote Sathyanarayana's essay on 'Growth of Education among the *dalit-bahujan* Communities in Modern Andhra, 1893 – 1947', "When 'many backward communities including *viswabrahman*, *sale*, *gamma*, *boya* and *kamsalek* sought an educational system with emphasise on vocational training ... but the colonial state preferred and largely encouraged non-technical education, and failed to provide the necessary incentives to vast majority of these communities .. the immediate and practical utility of English education was not appreciated by a majority of the lower caste groups, for the simple reason that they did not see in it any relevance to the direct expansion of their traditional skills and occupations."

The western education has also been criticised on the grounds of not improving the material livelihood of oppressed classes. To quote from one essay, "The shift from ascription to achievement as a basis of social mobility did not take place in Andhra. In a sense, instead of giving rise to a secular society, education tended to perpetuate the traditional social hierarchy based on caste." Caste prejudice seems to be dominating the discussion on the impact of and tardy progress of western education among the oppressed castes. 'It is often said that due to poverty and indifference the lower castes could not

gain easy access to modern education. Although this is partly true, it was in fact caste prejudice more than their communities' educational backwardness. ... In colonial Andhra, upper caste resistance was more fierce and bitter in those *taluks* which were relatively educationally advanced ... (p. 80) ... in spite of upper caste resistance. However, the *dalit-bahujan* communities managed to achieve some sort of 'sponsored' vertical mobility, mainly due to state patronage in the form of scholarships, hostels, special schools. These limited education and occupational changes did not substantially alter their material conditions; in fact, the social world of lower orders remained the same as it had been in the past ... (p. 81).

Besides, the fact the present education system which is 'western' and dictum followed by the Free India also resulted in the production of thousands of reserve army of graduate and post-graduate persons to register in the government employment offices for government jobs, some sort of glorification of western education can also be seen in some essays. Chinna Rao Yagati says, "In pre-British Indian society, education had a religious context, and theological causation was supreme. In contrast, the "modern" educational system introduced by the British was "theoretically" open to all and its contents were secular." (p. 87)

Conversion is considered as the real 'solution' *dalits* and tribals found comfortable. Why the caste system is still persisting even among the 'converted' needs to be answered. When it comes to the effect of the education of first

generation *dalits*, Yagati says, "The first generation of educated untouchables became either ideologues or activists of the *dalit* cause. They made efforts to educate the *dalit* masses, seeing education as the most effective way to break the strongly embedded caste hegemony. In their writings in journals, pamphlets, political addresses, novels and poetry, they ridiculed the efforts made by the upper caste Hindu reformers, and exhorted the *dalits* to realise the utility of education. The education produced an intelligentsia and others who in turn fought for *dalit* rights. Such rights became the subject of legislation only in the post-colonial society" (p.109). This is a quite interesting observation but one cannot avoid posing questions relating to second generation educated among the *dalit* community. What happened to them? Have they mingled with the mainstream and ignored the majority of *dalits* residing in villages without enjoying the developmental fruits. Let's take reservation for SC/STs in government jobs. If the first generation is able to benefit from education, get well-paid regular salaried jobs and also become vanguards of cause of SC/STs, whereas the second generation *dalits* show little interest in these things. What is the necessity for giving them the reservation? Why don't we reserve the government jobs for first generation educated among SC/STs only? This will bear two fruits: (a) allow those who are yet to enjoy the developmental fruits and (b) make more and more vanguards for the cause of SC/STs.

Why there is a need for giving access to education by colonialists? For

colonialists, they need people to man the colonial administration; they needed clerks and soldiers to run the administration. When they undertook steps to exploit the natural resources in the country, the agitated 'natives' of the country needed to be 'softened' to which they found education as a better tool. For them, the motive is more of a short term and they had little concern for long-term issues and problems, which would come out of their 'education' ventures. They did not expect any emergence of social and cultural movements. Joseph Bara in his essay, "Tribal Education, The Colonial State and Christian Missionaries: Chhotanagpur, 1839-1870", tells us how Mundas and Oraons were brought under western education and 'civilised' to the extent that the Christian tribals became a special target of the revolting landlords in the course of the Mutiny of 1857. It is interesting reading travelogues narrating how difficult it was for missionaries as well as for colonial government to 'civilise' the tribals. When Hindi and English were introduced to them, which were completely alien to them, they heeded no interest for a very long time. Missionaries had to come to terms with the tribals by helping them to sort their day-to-day problems, mainly legal issues, relating to their lands.

In Ghanashamshah's essay, we find a different trend where a few communities saw the improvement in their economic and social status. His essay is quite interesting where he explains how a few backward classes were able to acquire income generating assets and become part of the elite sections and suggests how formal education for the disprivileged could be an important

factor for their social mobility.

Some of the essays that look into contemporary issues analyse the literacy and economic deprivation of the disprivileged in the post-Independence India. When it comes to lack of strict adherence to job reservation in government offices, one may tend to get a very fuzzy idea whether the *brahminical* forces are still operating in such job segments. To quote what the editor says: Although legal job quotas have been instituted in the public sector, social mobility as a result of new job opportunities has not significantly increased; this is but 'natural' because *dalit* enrolment is low in higher education, a requirement for the 'superior jobs'. One may be surprised to know even in 2002 when thousands of graduates and post-graduates from oppressed classes have come out but could not enter the organised segment job markets, this sort of argument is put forward. This will naturally raise the question on the nature of 'superior' jobs in government job markets. When it is relating to filling up the backlog of vacancies which are meant for SC/STs in universities, colleges, public sector undertakings, state and central civil services, armed forces and the like, how come they could not find candidates from oppressed classes? Does that mean the existing education is able to create candidates for 'superior' posts from all communities but SC/STs? If that is the case, there is a need for special schools, which could be comparable with premier private schools yet run by states. Ambrose Pinto, when calling for separate educational institutions for *dalits*, also goes beyond the point they should be

developed to evolve a new culture based on egalitarian principles. He says that the establishment of 'exclusive' centres of higher learning for *dalits* will teach the spirit of fellowship, exchange of knowledge through cooperative learning, exhibition of *dalits*' folk culture and values it and establishment of communities of solidarity for social change. This new system based on the new institutions of counter-culture would be sensitive to *dalits*' cultural values. This takes us to ask another question. Is there any movement at least in the forming stage, after fifty five years of Independence, that mobilises SC/STs having the 'counter culture' as their principal way of life? One has to question whether the beneficiaries of reservation come forward to evolve such counter-culture or are 'happy' with the 'sanskritisation' and 'westernisation' processes.

History gives us lessons for future. When the colonial government in Madras presidency encouraged oppressed classes to go to schools, caste Hindus strongly opposed it and many parents stopped sending their children to schools. Many schools of the villages were located in places and streets caste Hindu reside, they objected it and did not allow the *dalit* children to come to schools. Many buildings were owned by caste Hindus, the government took up a major initiative in the whole presidency to locate all the schools outside the caste Hindu localities. This could have been better precedent for Panchayat Raj. For instance, location of Panchayat buildings in the caste Hindu locations was major problem for *dalit* Panchayat members and presidents even to enter those

buildings. If the government had taken steps to construct Panchayat office buildings outside the caste Hindu localities, caste clashes could have been avoided. This is one example. Those who are calling for decentralisation may be asked to understand, as Andre Betaille says, the matrix of village and 'community' life they live in and rethink about the role of state in evolving the class and casteless society.

Quality of education cannot be seen just by number of graduates and postgraduates but also who imbibe those skills, how the teachers take up these issues, how the teachers working in government schools take up the need for quality education for the disprivileged sections. Their mindset needs to be studied by keeping in mind how teachers in earlier period were able to produce better citizens than today from government schools. The changing society and its dynamics also need considerable attention particularly in the historical context.

Pinto raises some point regarding the quality of higher education and what the reservation did to the oppressed communities. How IITs, IIMs and JNUs are well managed by government, why not other institutions including schools and government colleges? This misses an important point. Who are going to those institutions? Students from private schools are trained to clear the entrance examination with lots of money and have studied in English medium convents. The quality of the students is good, so also the quality of outcome from those higher education institutions. The only exception would be a few missionary institutions, which are established in

rural areas and enrol rural students. By rigorous training, they were able to raise the 'standard' of students

The hypocrisy of the casteised Indian society is clearly brought out in this book. The backward classes and their politics in the colonial period were different from what we see today. Gone are the days when E.V. Ramaswamy Periyar, a social reformist in South India called for greater empowerment and literacy to women and the Maharashtra leaders, who we have seen earlier, fought for the literacy of oppressed classes including women. Now, the present day representatives of backward class politics are not interested in giving reservation to women in Parliament. Some of the essays look at the colonial education as not intended to improve the

material conditions of the oppressed classes.

This book could be of help to those interested in knowing about historical developments and how the Indian society adopted to the social changes which impacted education. A reading of the book by teachers, teacher educators and researchers might open new vistas for research and also for thinking to find out how the Indian education and social development were to bring out qualitative changes in what should be for the future.

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CONSTITUTION OF INDIA

Part IV A

Fundamental Duties of Citizens

ARTICLE 51A

Fundamental Duties – It shall be the duty of every citizen of India —

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem,
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India,
- (d) to defend the country and render national service when called upon to do so,
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities, to renounce practices derogatory to the dignity of women,
- (f) to value and preserve the rich heritage of our composite culture,
- (g) to protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform,
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement

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